For producers of Sand l Gravel, Crushed Stone, ment, Lime, Gypsum, and ther nonmetallic minerals

EUGENE B POWER
UNIVERSITY MICROFILMS
313 N FIRST AVE
ANN ARBOR MICH

NOVEMBER 1956

PIT and QUARRY

Table of Contents, Page 2

Drilling Operation in a Gypsum Mine of National Gypsum Company.

Real Flexibility—Each ply is full-pasted to itself—but not to the other plies.

Armored Strength—The accurate overlapping of paper tube ends together with the built-in flexibility gives chain-mail strength to both ends of the bag.

New Full Wrap-around Valve Sleeve—This complete sleeve, combined with armored strength and real flexibility, means stronger, more sift-proof and cleaner bags.

All this adds up to wide service and greater values to all users of Bagpak multiwall bags.

For more information, prices and delivery dates, call nearest branch, or call direct.

produced on new equipment—the latest, most accurate, and finest machinery made.

International Paper COMPANY

BAGPAK DIVISION
Dept. PQ-11

220 EAST 42ND STREET, NEW YORK 17, N.Y.

BRANCH OFFICES: Atlanta · Baltimore · Boston · Chicago · Cincinnati · Cleveland · Dallas · Denver · Des Moines · Detroit · Kansas City, Kansas · Los Angeles · Minneapolis · New Orleans · Philadelphia · St. Louis · San Francisco · IN CANADA: The Continental Paper Products, Ltd., Montreal, Ottawa, Toronto

200 PIECES OF EQUIPMENT---TO BATTLE ROCK, MUCK AND EARTH---

ON 9-MILE STRETCH OF MASSACHUSETTS TURNPIKE!

CARVING OUT 800,000 YARDS OF ROCK—plus 5 million yards of earth—is taken in stride by Grandview Construction Corp. Their equipment "army" on the Massachusetts Turnpike includes over 50 rear and bottom dumps, 17 bulldozers, 18 compactors, 15 compressors, over a dozen shovels, draglines and cranes — and all sorts of special equipment. The tires used in this rocky cut are Goodyear's super-tough Hard Rock Lug.

THOROUGH MAINTENANCE A SECRET OF SUCCESS—This earth-moving monster has been overturned to simplify underside repairs. Tires are All-Weather Earthmover. Like all Goodyear tires, these are readily recappable—just contact your Goodyear dealer.

FAST-STEPPING OUTFITS END TUBE AND FLAP TROUBLES

with Goodyear 3-T Nylon Cord

TUBELESS TIRES!

Ever consider what tube and flap troubles can cost in down time—plus cost of *replacing* tubes, long before tires are worn out?

And Goodyear TUBELESS tires save in many other ways! They run cooler—injuries are easy to detect—blowouts rarely occur—many repairs are simpler than ever before—construction and assembly are *airtight*—mounting of all sizes is quick and sure—and the simpler valve parts are re-usable!

Goodyear TUBELESS tires and rims are standard (or can be specified) on most sizes and types of new equipment—check your equipment manufacturer when purchasing. For moneysaving change-over of present equipment, simply contact a Goodyear dealer.

Goodyear, Truck Tire Dept., Akron 16, Ohio

NOW IN 3-T NYLON CORD —*TUBELESS* OR TUBE-TYPE!

Look for this nearby Goodyear dealer sign for better tire values—better tire care.

Buy and Specify **GOODYEAR**

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

Road Lug, All-Weather, Sure-Grip—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

PIT AND QUARRY, November, 1956, Vol. 49, No. 5. Published monthly by Pit and Quarry Publications, Inc., 431 South Dearborn St., Chicago 5, Ill. Subscription price $3 for 1 year in the U.S., possessions and Canada. Central and South America $10 for 1 year, elsewhere $15. Single Copy $.50 except $1 for January, May and July. Entered as second class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1879. Postmaster: please send notices on Form 3578 and copies returned under label Form 3579 to 431 South Dearborn Street, Chicago 5, Ill.

pit and quarry

THE BASIC MAGAZINE IN A BASIC INDUSTRY

NOVEMBER 1956 Vol. 49 No. 5

IN THIS ISSUE:

EDITORIAL

Hoover Proposals Need Your Support! 10

PLANT

A Portable Gravel Plant—Complete with Washing Units .. 106
New 300-T.P.H. Desert Operation Replaces Old Hartman Plant 111
Quality Limestone Products Maintains Steady Growth 124
Historic California Area Is Site of New Silica Plant of Owens-Illinois 130

TECHNICAL

Chain System Installations in Cement Kilns 94

LEGISLATIVE

Washington News Letter 12

LABOR

Labor Developments 88

PROCESSING

Proper Maintenance and Use of Conveyor Belts 116

ASSOCIATIONS

N.L.A. Operators' Meeting in Springfield, Mo. 76
Nonmetals Session of Mining Congress in Los Angeles 82
N.S.G.A. Directors Transact Important Business at Pebble Beach 86

OTHER

Report on 1954 Census of Crushed Stone Industry 48
The Court Is the Payoff 120
Deductible or Non-Deductible?—Convention Expenses of Wives Clarified 133

THE CONCRETE MANUFACTURER

EDITORIAL

A Case of Poor Judgment 231

PLANT

Rx Ready Mix—A Complex Business 248
Fort Meade Building to Have Colorful Precast Panel Walls.. 265

ASSOCIATIONS

Directors of N.R.M.C.A. Mix Business and Pleasure at Pebble Beach Sessions 252
New York's Concrete Industry Board 256
First N.C.M.A. Sales Conference 274

TECHNICAL

L.P.G. as a Fuel for Fork Trucks 257
Electronic Longhand Eliminates Errors in Materials Handling .. 270

SAFETY

N.R.M.C.A. Announces Winners in 1956-57 Safety Contest ..268

News of the Industry..... 23
New Machinery 58
Screenings 72
More Information Please 101
Industry Personalities 140
Obituaries 142
Legal Decisions 146
Manufacturers' News 162

News of the Concrete Industries 233
New Machinery for the Concrete Industries 278
Index to Advertisers 308

Cover Picture

• The front cover picture of this issue of PIT AND QUARRY is in our opinion an excellent example of what a little imagination and a sound knowledge of the art of photography can do with an unglamorous subject. The scene a familiar and rather prosaic one to many, shows a blast-hole drilling operation in one of the gypsum mines of the National Gypsum Company. By the skilful use of light and shadow the photographer has made this picture dramatic and artistic.

Published on the first of each month for producers and manufacturers of Cement, Crushed Stone, Gypsum, Lime, Sand, Gravel and other nonmetallic minerals. **Copyright 1956 by Pit and Quarry Publications, Inc.,** **431 S. Dearborn Street, Chicago 5, Illinois. PIT AND QUARRY magazine was founded by H. W. Baumgartner, October, 1916.**

To subscribers: When requesting change of address, kindly send old as well as new address.

PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX

3 EASTON TRAILERS

match the performance of

FIVE END-DUMP TRUCKS

IN SHOVEL-TO-CRUSHER HAULING, where the same truck chassis is specified for either end-dump trucks or EASTON side-dump trailers, the following ratio has been established:

Three easy-going EASTON trailers will equal the production of five fast-moving end-dump trucks.

The initial cost is generally equal for a fleet of three EASTON tractor-trailer units compared to five end-dump trucks. EASTON trailers haul a 50% greater payload with the same power. EASTON trailers meet production requirements with fewer trips. The EASTON system cuts your operating costs right down the line from fuel to maintenance.

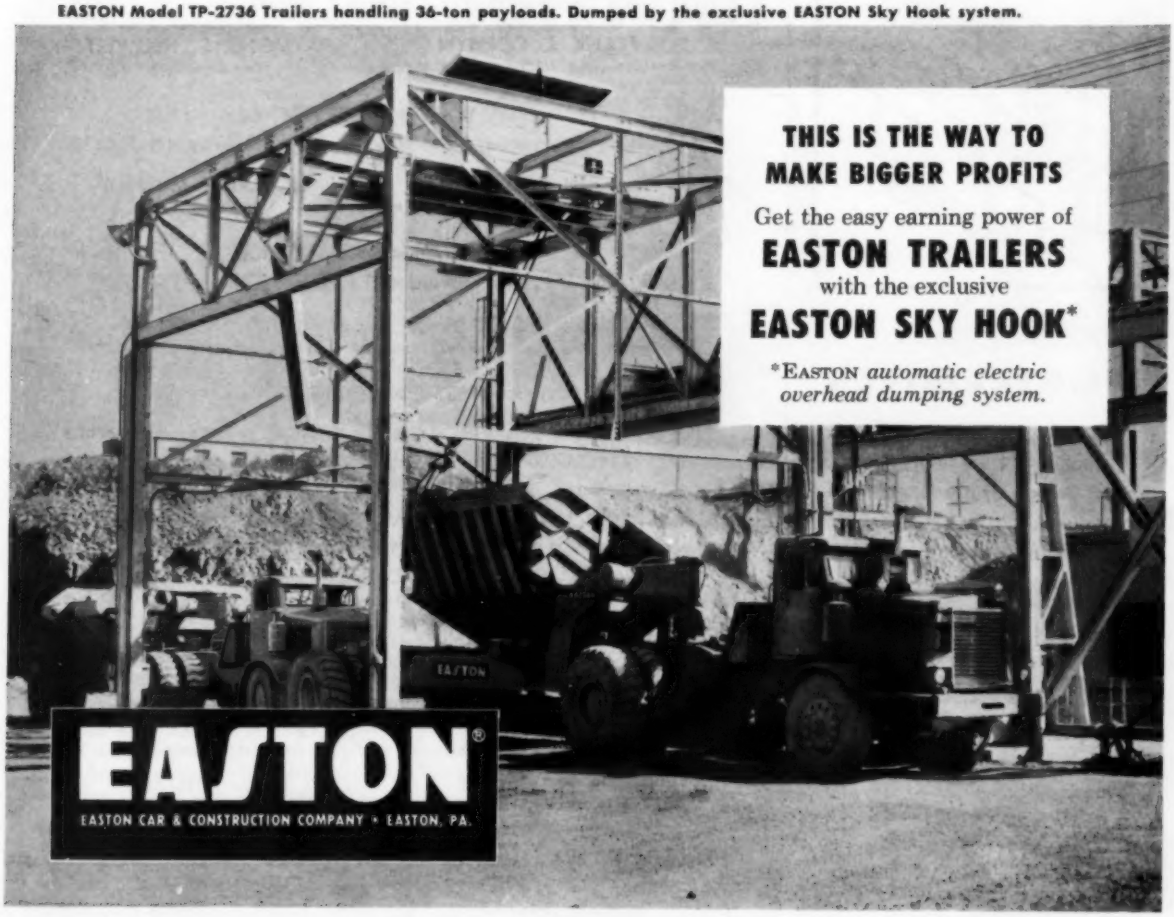
Breakneck speed is not necessary with EASTON trailers. It's always impressive to see how easily EASTON trailers meet big production schedules. They're easy to load, easy on the driver, easy on the roads, easy on maintenance, easy on costs.

With EASTON trailers you get a very important extra bonus . . . exclusive EASTON sky hook dumping. Overhead dumping takes the dead weight of the hoist out of your payloads . . . assures fast, dependable, controlled feeding to the crusher.

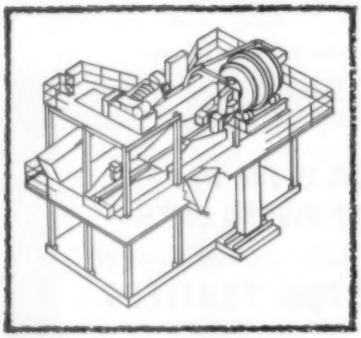
Want the biggest return for your haulage dollar? Want the facts on replacement costs? Write or telephone now for technical information.

B-1074

EASTON Model TP-2736 Trailers handling 36-ton payloads. Dumped by the exclusive EASTON Sky Hook system.



preferred



WEMCO
MOBIL-MILLS
are the most widely preferred HMS plants because they provide *proven design at predetermined cost — trouble-free operation from the first day.*

WEMCO
WESTERN MACHINERY COMPANY

650 Fifth St., San Francisco 7, Calif.

Offices and representatives in principal cities of the United States and Canada and in major countries throughout the world.

pit and quarry

WALTER E. TRAUFFER
Editor

HARRY F. UTLEY
Pacific Coast Editor

ROY L. PECK
Field Editor

BUREN C. HEROD
Field Editor

M. E. ANSEL
Assistant Editor

JAMES G. KOSTKA
Director of Marketing and Research

JANET M. COHN
Editorial Assistant

JAMES E. MONTGOMERY
Chairman of the Board

WILLIAM A. WILSON
President

RAY L. SMITH, JR.
Senior Vice-President

W. T. KLUSSMAN
Secretary-Treasurer

ROBERT L. RUDD
Circulation Manager

GEORGE P. GRANT
General Sales Manager

HAROLD L. DAVIS
Production Manager

CHICAGO BUSINESS OFFICE
431 South Dearborn Street, Chicago 5, Illinois, HArrison 7-8558

FRANK J. CORNYN
Vice-President and Midwest Sales Manager

RAYMOND S. NEUWELT
Representative

NEW YORK BUSINESS OFFICE
370 Lexington Avenue, New York 17, N. Y., MUrray Hill 5-4438

JOHN R. DUBLE
Vice-President and Eastern Sales Manager

RICHARD J. MURPHY
Representative

CLEVELAND BUSINESS OFFICE
453 The Arcade, Cleveland 14, Ohio, CHerry 1-4431

CHARLES H. BUSSMANN
Vice-President and Central Sales Manager

J. G. JOHNSON
Central Advertising Manager

WEST COAST OFFICE
HARRY F. UTLEY, 820 N. Magnolia Avenue, Whittier, California

REPRESENTATIVES

FRED W. SMITH
1212 41st St., Belview Heights, Birmingham 8, Alabama

THE McDONALD-THOMPSON CO.
San Francisco, California

EDWARD T. THOMPSON
3727 W. 6th Street
Los Angeles 5, California

T. HARRY ABNEY
National Building
Seattle 4, Washington

ROY M. McDONALD
625 Market Street
San Francisco, California

ROBERT H. HEIDERSBACH
222 Colorado National Bank Bldg.
Denver 2, Colorado

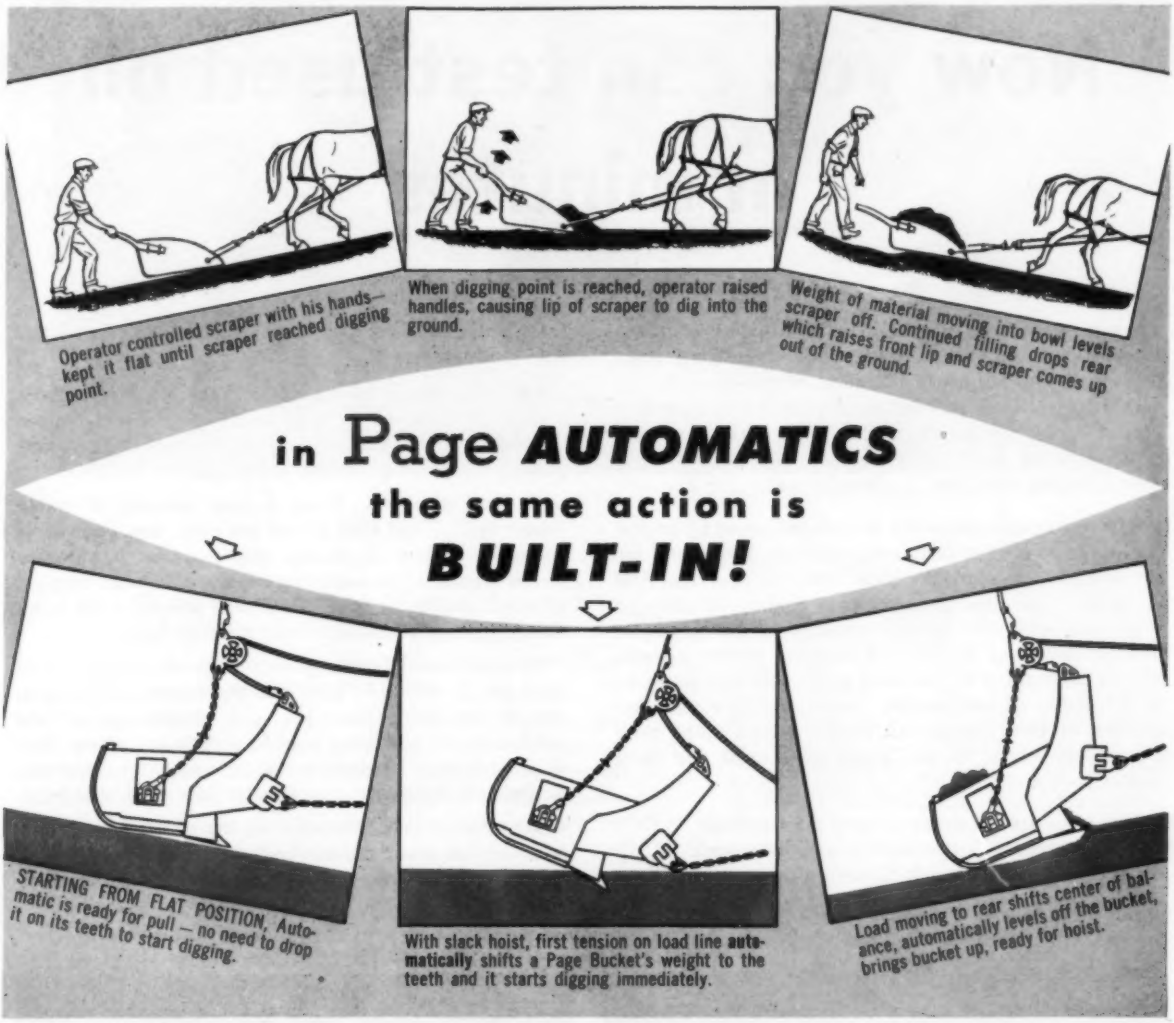
FRANK N. VICKREY
3217 Montrose Blvd.
Houston 6, Texas

ED J. WHETZLE
5526 Dyer Street
Dallas 2, Texas

TED R. TRAUTMANN
2010 South Utica, Tulsa 4, Oklahoma

REMEMBER The Old Slip Scraper

"digging action"?



Operator controlled scraper with his hands—kept it flat until scraper reached digging point.

When digging point is reached, operator raised handles, causing lip of scraper to dig into the ground.

Weight of material moving into bowl levels scraper off. Continued filling drops rear which raises front lip and scraper comes up out of the ground.

in Page **AUTOMATICS** the same action is **BUILT-IN!**

STARTING FROM FLAT POSITION, Automatic is ready for pull — no need to drop it on its teeth to start digging.

With slack hoist, first tension on load line **automatically** shifts a Page Bucket's weight to the teeth and it starts digging immediately.

Load moving to rear shifts center of balance, automatically levels off the bucket, brings bucket up, ready for hoist.

Page "AUTOMATIC'S" DIGGING ACTION Means More Production

Watch a Page Automatic work — see how it loads full in 1½ to 2 bucket lengths — break out for a fast hoist and you'll see why production-wise owners and operators choose an Automatic every time.

The automatic action built into every Page AUTOMATIC Dragline Bucket gives owners what they want — MORE PRODUCTION PER DAY . . . year in and year out in every kind of digging at any depth. We can prove the superiority of a Page Automatic on your own machine. There's no obligation. *Write for details and Bulletin GPB-554.*

Page

Automatic Dragline Buckets

Walking Draglines

B 3107

PAGE ENGINEERING COMPANY

CLEARING POST OFFICE • CHICAGO, ILLINOIS

If it's a Page... It DIGS

In place of wasteful and uncertain crankcase-oil changing based upon mileage or hours in service, many operators of heavy-duty construction equipment now use a better guide that saves them both time and money.

Now you can test used oil in minutes

IT HAS COME as something of a surprise to some maintenance men to discover that they have been throwing away hundreds of gallons of still-good oil . . . year after year. Conversely, it is quite a jolt to realize that a costly engine-repair job could have been prevented by an on-the-spot analysis that would have shown up the condition . . . in minutes!

The recommendations for oil changes issued by engine makers have always been computed on "averages" for the various classes of vehicle service. And like the "average" man on the insurance chart, the average vehicle doesn't exist in the actual fleet. For example, two bulldozers of the same make and model, operating on the same job, can have quite different patterns of oil economy and engine condition. Obviously no one set of rules can apply ideally to all units. And fortunately there is no longer any need for such generalization.

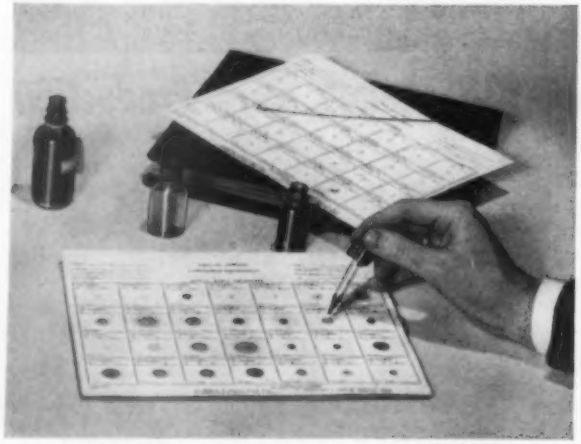
From a couple of drops of used oil, the Shell "ADC* Oilprint Analysis" provides a reliable check of oil condition, in minutes. It is very simple, and with a little practice, it tells you a lot about that oil and the engine that uses it.

What a drop of used oil shows: You place a drop of used oil on a piece of special filter paper supplied by Shell . . . let it stand a minute or two. You will then be able to *see* the following:

Water dilution: Even a tiny amount of water shows up . . . and that means not only that your oil is losing its ability to protect engine parts, but it also shows whether the water represents a normal amount of condensation or something more serious, such as an actual leakage of coolant from a faulty jacket.

Dispersancy/detergency: The same oil drop will give you a picture of how well the special additives in the oil are doing their job . . . whether or not the contaminants are being held in suspension where they do least harm . . . whether the cleansing and dispersing actions are adequate . . . whether the oil is still good.

Adulteration: The color of the oil spot will show whether too much contamination is occurring . . . and will very often point up the cause, indicating a check on



The simple test setup: sample bottles, a wire rod, a bottle of "indicator," and the permanent record card.

This single, on-the-spot sample reveals many things about an engine.

A fleet superintendent sees how easily the test is made.

injectors, nozzles, oil and air filters of diesels, or on plugs, carburetors and filters of gasoline engines.

All of the above can be learned from the single drop of oil . . . in an amazingly short time.

Alkalinity: Engine wear and engine deposits increase as the oil becomes acidic in nature due to contamination from combustion products. A special indicating fluid, developed in Shell Laboratories, tells at a glance whether oil is alkaline and still usable, or acid *and how much.*

Operators who keep an ADC Oilprint Analysis record of each vehicle generally find that the crankcase oil stands up longer than they had figured . . . a distinct saving in lubrication cost. At the same time, there is a running check on each engine that often detects impending trouble before its correction becomes costly. In this respect, the Shell ADC Oilprint Analysis qualifies definitely as one of the valuable recent tools of preventive maintenance.

If you are concerned with extending the service of crankcase oil, and with avoiding the risk of using oils loaded with contaminants, we suggest that you have one of the Shell service engineers demonstrate ADC Oilprint Analysis for you.

*Trademark

Photo shows an oil-spot test card...one phase in the visual life record of a charge of oil.

The Shell "indicator" shows acidity instantly. If spot turns red, oil is no longer fit to use, should be changed quickly.

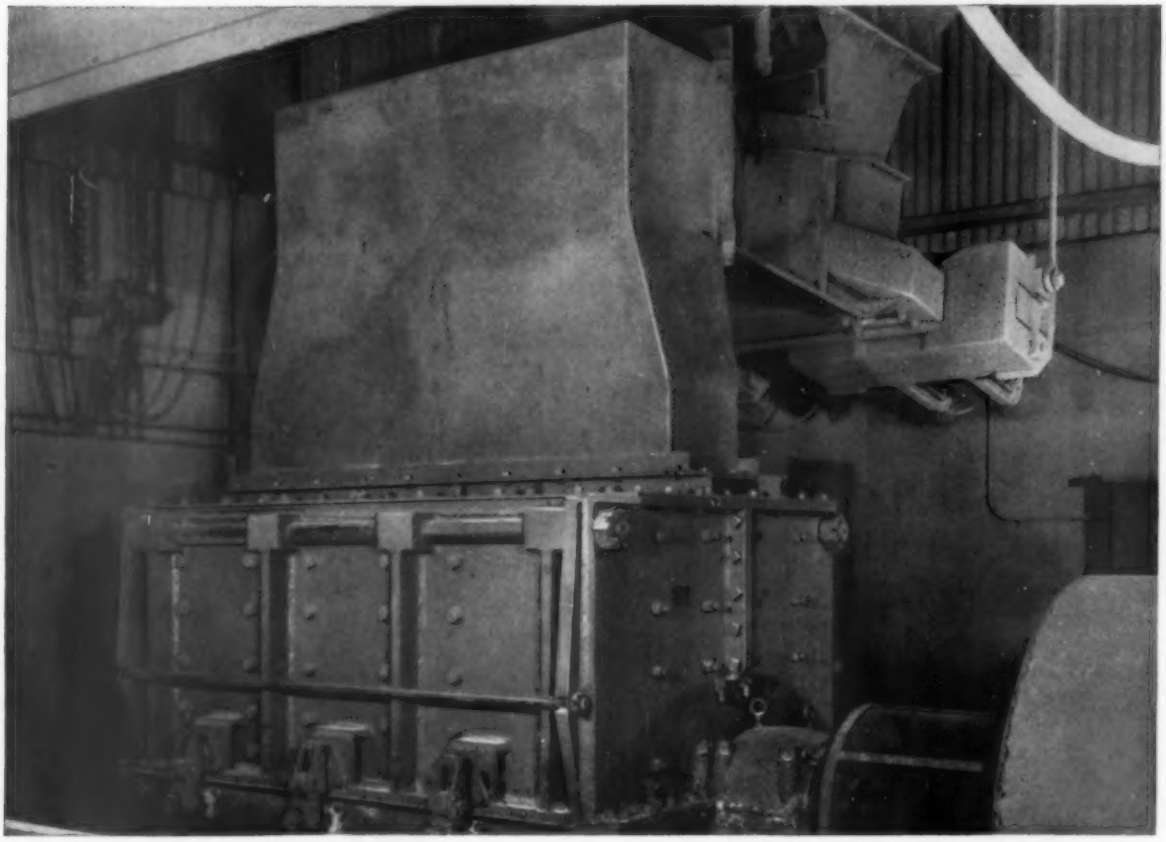
SHELL OIL COMPANY

50 WEST 50TH STREET, NEW YORK 20, NEW YORK
100 BUSH STREET, SAN FRANCISCO 6, CALIFORNIA

SHELL

"We're very well pleased with our Jeffrey Crusher"

reports South Dakota State Cement Company



42" x 82" Jeffrey Type B Reversible Impact Swing Hammer Crusher mill at South Dakota State Cement plant, Rapid City, South Dakota. Crusher is fed by 5' x 6' Jeffrey enclosed electric vibrating feeder.

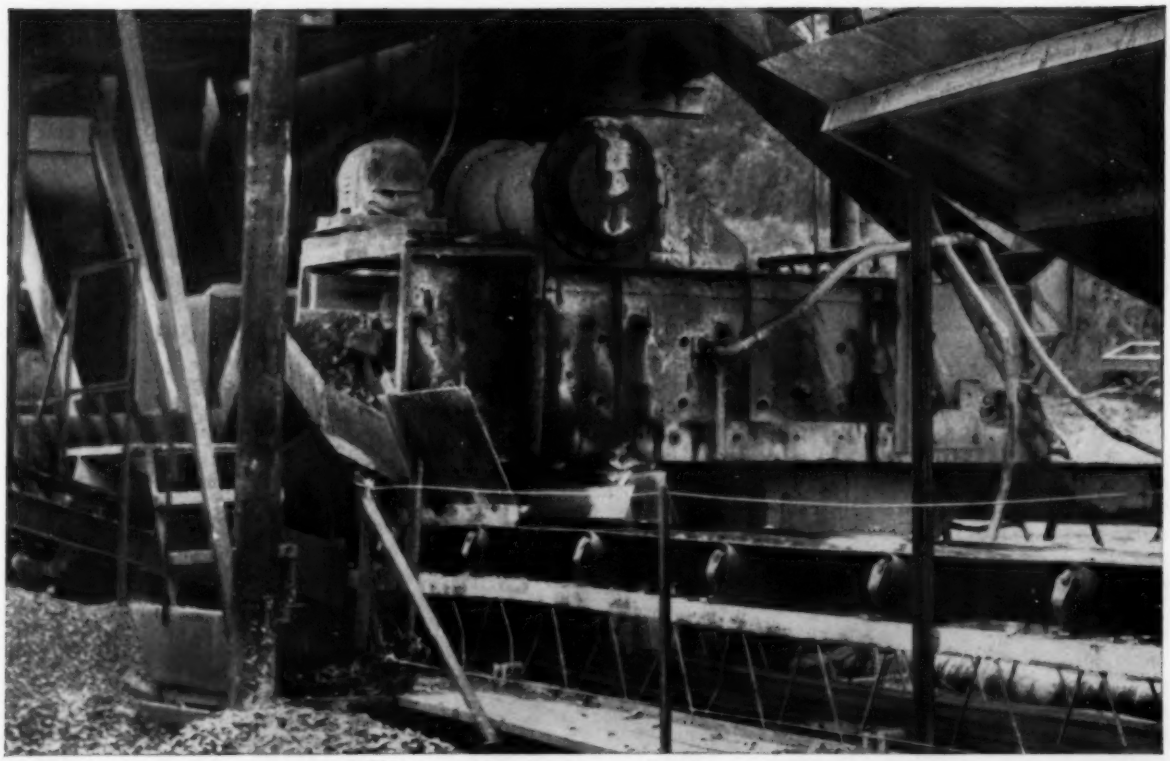
350 to 400 tons of limestone per hour are reduced by this Jeffrey crusher to ¾" x 0" size. The chief engineer for this plant says they are well pleased with this crusher and its Jeffrey feeder.

This reversible swing hammer crusher is the outgrowth of many years of experience in reducing cement rock and limestone to a product suitable for tertiary or fine grinding mills. Jeffrey engineers designed it to produce the most efficient product size for operation at peak capacity, with minimum upkeep and power usage.

Bulletin 868 describes this crusher. For a copy, or for help in solving any reduction problem, write The Jeffrey Manufacturing Company, Columbus 16, Ohio.

CONVEYING • PROCESSING • MINING EQUIPMENT
TRANSMISSION MACHINERY • CONTRACT MANUFACTURING

JEFFREY



5 Deister Screens help Sidwell Bros. produce up to 300 tph!

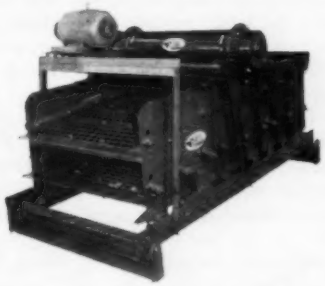
Sidwell Brothers, South Zanesville, Ohio, quarry owners, have been Deister boosters since 1947. Says Carl Sidwell, "Deisters make good, dependable, efficient screens. We've had real service from ours . . . that's why, when we needed more screening capacity last spring, we bought two new Deisters."

Sidwell Brothers use 4 different type Deister Screens for their specific requirements. Entire feed from a 42" x 48" primary crusher (up to 300 tph) crosses a Deister UHS (Side-Tension) Single-Deck 5′ x 8′ Scalper with 2" openings. All 2 x 0 stone is rinsed and de-watered on a Model UF (Flat) Double-Deck 4′ x 12′ Horizontal Screen with ½" openings on the top deck and ⅛" on the bottom.

Tipple No. 2 utilizes Sidwell Brothers' original Deister, an End-Tension Three-Deck 5′ x 12′, for sizing coarse aggregate to specifications. A pair of Deister SL (High-Speed) Single-Deck 4′ x 8′ Ag-Lime Screens, mounted on a 30° slope, produce the finer sizes.

If you, too, have a tough aggregate screening problem, you can benefit from such *exclusive* Deister features as Adjustable Slope Panels (independently adjustable at both feed and discharge ends to increase or decrease screening angle) . . . Unitized Life-Time Vibrating Mechanism . . . Opposed Elliptical Throw controls material movement on screen for greatest sizing speed and efficiency. Write Deister for recommendations on your screening problems.

Model UF, top, and Model SL, immediately above. Below, Model UHS double-deck Deister Screen equipped for suspension mounting.



DEISTER MACHINE COMPANY

1933 East Wayne Street, Fort Wayne 4, Ind.

The Editor's Page

Hoover Proposals Need Your Support!

THE fact that waste and inefficiency in our government is costing taxpayers billions of dollars annually is known by nearly everyone, but apparently few are sufficiently concerned to do anything more than talk about it. This general state of public apathy is probably largely due to the widespread feeling that this condition has been with us so long that nothing can be done about it. It may come as a surprise to some to learn that more was probably done to correct this condition this year than ever before in history; and that in the coming year practically the entire Hoover Commission program can be carried out—if the country's businessmen will let Congress know that this is what they want.

Former-president Herbert Hoover, who has devoted most of his long and useful life to public service, has spent much of his time campaigning for more efficient government. Lack of interest on the part of the public and business, and opposition from various sources have not discouraged him. The first Hoover Commission, which terminated its activities in 1949, was formed for the purpose of reorganizing certain government departments. It made 175 recommendations, about three-fourths of which were adopted, in full or in part, by Congress. The others, including some of the most important, were laid aside and forgotten.

THE second Hoover Commission was composed of more than 150 leading business and professional men whose patriotism led them to undertake the tremendous task of determining the weaknesses in our governmental system and getting them corrected. Many other businessmen, members of Congress, and others have worked hard to get the commission's recommendations enacted into law. Full support by the public and business is now necessary if this is to be accomplished.

The urgent need for action is emphasized by the fact that, contrary to what we had been led to believe, government spending is on the rise again. The estimate for 1957 is $69.1 billion—$4 billion higher than the January estimate. This points to a 1957 surplus of only $700 million, leaving little reason for optimism regarding tax cuts.

The Hoover Commission recommendations offer the nation better government at a $5.5 billion saving annually. This can be obtained without curtailing any essential government services, and without jeopardizing our national security program. By effecting such a reduction in the annual cost of government, overall federal taxes could be reduced by about 8 percent.

ABOUT one-half of the Hoover Commission recommendations require legislation; the other half require administrative action only. Most of the proposals acted upon to date have been on the administrative side, but the most important measures so far put into effect have been set in motion by Congress. Actually, the 84th Congress approved, in whole or in part, one-fourth of the Hoover Commission recommendations that must be implemented by legislation.

A recent unofficial compilation indicates that during the 16 months since the Hoover Commission submitted its final report to Congress, steps have been taken or put into effect, in whole or in part, on 112 specific proposals recommended by the commission. This is only 35 percent of the commission's 314 recommendations for federal reorganization and more efficient government at less cost.

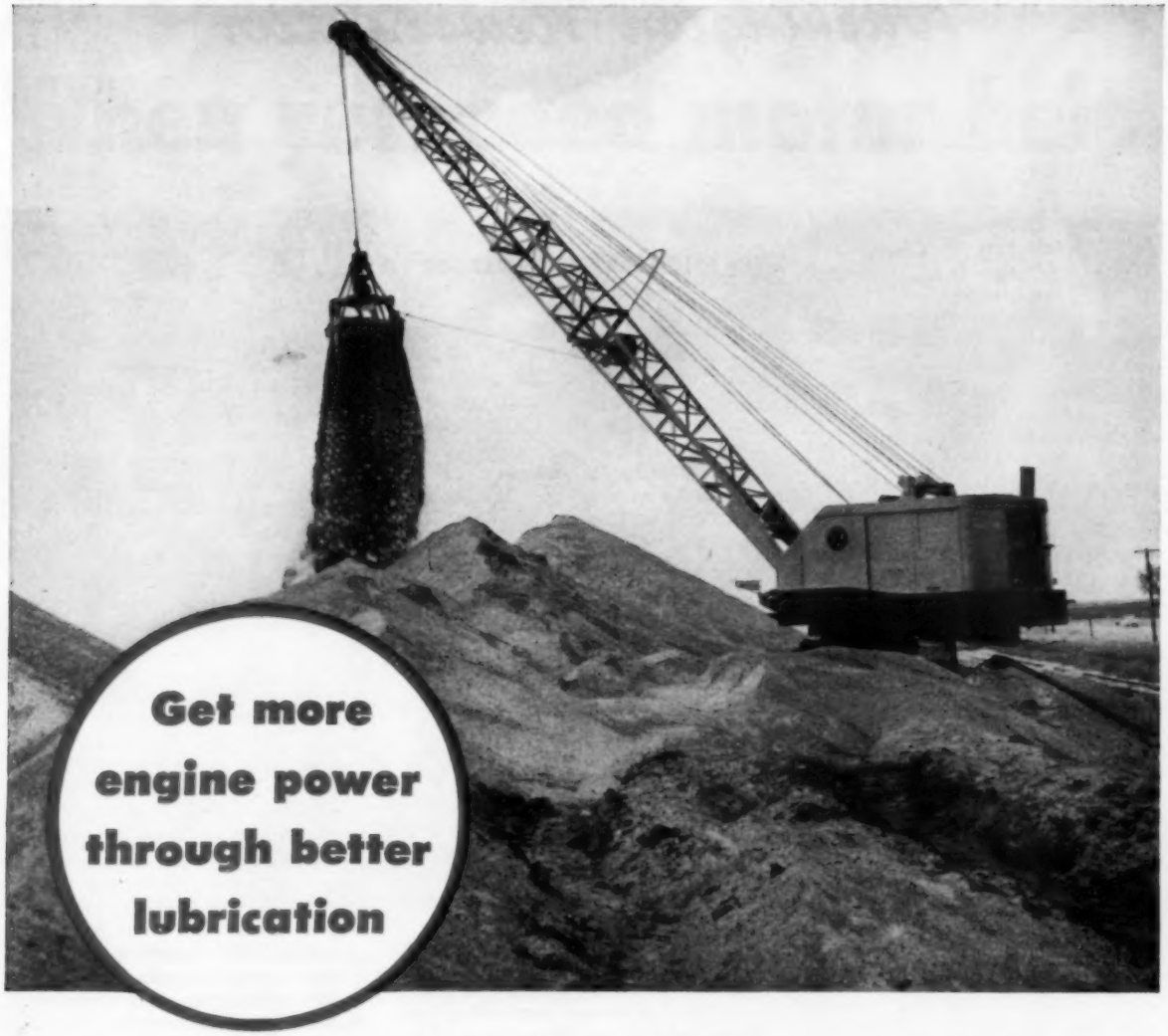
It is encouraging to note that the Bureau of the Budget recently began work on the vast and complex job of improving the government's financial management as outlined in the first major Hoover Commission recommendations to be passed by Congress. All federal agencies have been called upon to establish programs at once to make recent budgeting and accounting legislation effective, and to include other improvements. Due to the nature of some of the changes to be made, however, this will be a long-range program which may take several years to complete.

ALTHOUGH action has been initiated to put into effect 20 of the 25 budget and accounting recommendations, Congress failed to act on the most important proposal of all—that annual appropriations for executive departments be limited to the amounts actually needed to pay for goods and services to be received in the next fiscal year. Nor has Congress acted on a related recommendation that limitations be placed on obligational authority for so-called multiple-year programs involving aircraft, ships, etc. These two measures would restore to Congress control over the annual level for federal spending by eliminating the huge carryovers of appropriated but unexpended funds which have defeated the efforts of Congress to retain control of the public purse.

It is encouraging to note that even the small amount of progress made to date will result in tax savings of $532,600,000 annually, and that this has been accomplished in spite of widespread citizen apathy, in spite of election year complications, and in spite of bureaucratic opposition and actively hostile special-interest groups.

THE most discouraging feature is that so little progress has been made in carrying out such an important program. Every day's delay in putting this program into effect costs us $15,120,000 tax dollars. It took five years to obtain favorable action on 72 percent of the recommendations of the first Hoover Commission. It has been 16 months since the second Hoover Commission completed its work, and its success or failure depends largely on what happens in 1957. It is up to each one of us to see that it does not fail.

Walter E. Trauffer



FULL POWER, dependable performance from a cleaner, better-lubricated engine — these are the benefits enjoyed by all who use world-famous *Texaco Ursa Oil Heavy Duty.*

Texaco Ursa Oil Heavy Duty will safeguard vital parts against wear and corrosion, prevent harmful deposits, keep rings and valves free, assuring full compression and complete combustion. You'll get *more power* with *less fuel* over *longer periods* between overhauls.

Texaco Ursa Oil Heavy Duty is one of a complete line of *Texaco Ursa Oils* to meet the requirements of all diesel and heavy duty gasoline engines.

In hydraulic mechanisms, *Texaco Regal Oil R&O* prevents rust, sludge and foam, assures smoother operation and low maintenance costs.

For wire rope and open gear lubrication, use *Texaco Crater* or easily applied *Texaco Crater X Fluid.* They keep rope strong longer, greatly extend gear life.

Effective lubrication can step up efficiency in every phase of your operation. Ask a Texaco Lubrication Engineer for full details. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

Washington News Letter

By S. HERBERT UNTERBERGER

THE general notion that election years are periods of uncertainty, during which business leaders hesitate to make plans while waiting for the political situation to clarify, appears to have been completely disregarded this time. There are conflicting theories about why this is so.

One school holds that business executives were so certain that there would be no change of administration that they did not bother to consider that possibility in making their plans. The other and perhaps the more reasonable explanation is that they believe it made no essential difference which party won. Both parties were held to be basically committed to a continuation of an environment in which private enterprise could continue to thrive.

Regardless of the reason, the fact remains that business plans are moving forward with a full head of steam. According to a survey recently released by the U. S. Department of Commerce, business investment is going to increase in the final two quarters of this year.

Businesses which spent $34,500,000,000 for capital investment in the second quarter of the year reported that they plan to spend $36,000,000,000 in the third quarter and $38,000,000,000 in the fourth quarter. If this really occurs, it will be the seventh successive quarter of substantial increases in business capital outlays. The projected rate in the last quarter of this year is 50 percent above the rate in the first quarter of 1955, when capital spending was at a recent low.

A part of the increase over 1955 was accounted for by price increases, but while capital expenditures have increased up to 50 percent, prices appear to have increased only about 5 percent.

Again this year, manufacturing—particularly durable goods manufacturing—appears to be taking the lead. Among the non-durable goods industries, scheduled advances are most pronounced in chemicals, petroleum, rubber, and paper. The food and beverage group anticipates little gain, and the textile industry expects a small drop. This divergence in the trend between the heavy hard goods industries and the light soft goods is beginning to take on the characteristics of a regular phenomenon. It is almost as if the former are the "haves" of American industry and the latter are the "have nots."

Related to this matter of capital expenditures is the fact that durable goods industries are experiencing most of the technological and productive advances, while, despite many efforts, new technologies seem to elude the textile and apparel industries. For the most part, textiles and apparel are still being made pretty much in the same old way. As a result, the industries are not prosperous, their communities are depressed, and their employees are underprivileged.

Among the non-manufacturing industries, electric utilities and communications continue to lead the pack.

The rise in capital expenditure is somewhat surprising in view of the fact that in recent months, at least, it appears as though every effort has been made to cut them down. The principal method to accomplish this dampening down was, of course, the Federal Reserve's restrictive credit policy.

Actually, this policy has not so much restricted the capital expenditure boom as it has changed the *method* whereby that boom is financed. Its impact has been elsewhere. Apparently the builders of industrial capital equipment were willing to offer higher interest rates for borrowed funds than other customers for investment funds. Being among the highest bidders, they were able to divert to themselves savings which might otherwise have gone into mortgages. This fact accounts in part for the upsurge in the popularity of financing *via* corporate bonds.

Early in the year many firms expected that for political reasons the money market would be loosened up. As a result of that judgment they continued to finance their capital expenditure out of short-term bank loans which they expected to refinance later at lower interest rates.

Their judgments were wrong. Instead of falling, interest rates rose. And when, ultimately, they had to finance through long-term obligations, they went to the bond market and found it congested. They had to pay higher rates than ever before.

However, this situation has not cut off the boom in capital outlays. To see who was cut back, it is necessary to look elsewhere, principally at the home mortgage market. Here, apparently, the anticipated profits were not sufficient to pay equally higher interest rates. As a result many home builders, faced with the necessity of paying premiums for money, have withdrawn. Recent government efforts to broaden the market for 4½ percent mortgages by scheduling increased mortgage purchases at higher prices for "Fannie Mae,"* raising the limit on savings and loan association borrowings from the Federal Home Loan Banks, and lowering from 7 to 5 percent down payments of the FHA on homes appraised at $9,000 or less have not been very successful. The lowering of down payments may actually contribute to failure rather than success because it increases the demand for mortgage money which can not be supplied at the offered rate.

There are, of course, some beneficiaries of the whole process. Those who object to it or who are trying to use the development for political advantage are apt to point out that the banks are destined to make a rather unexpected profit. The price of the things they supply, money for borrowing, has gone up. It is good to be in this position.

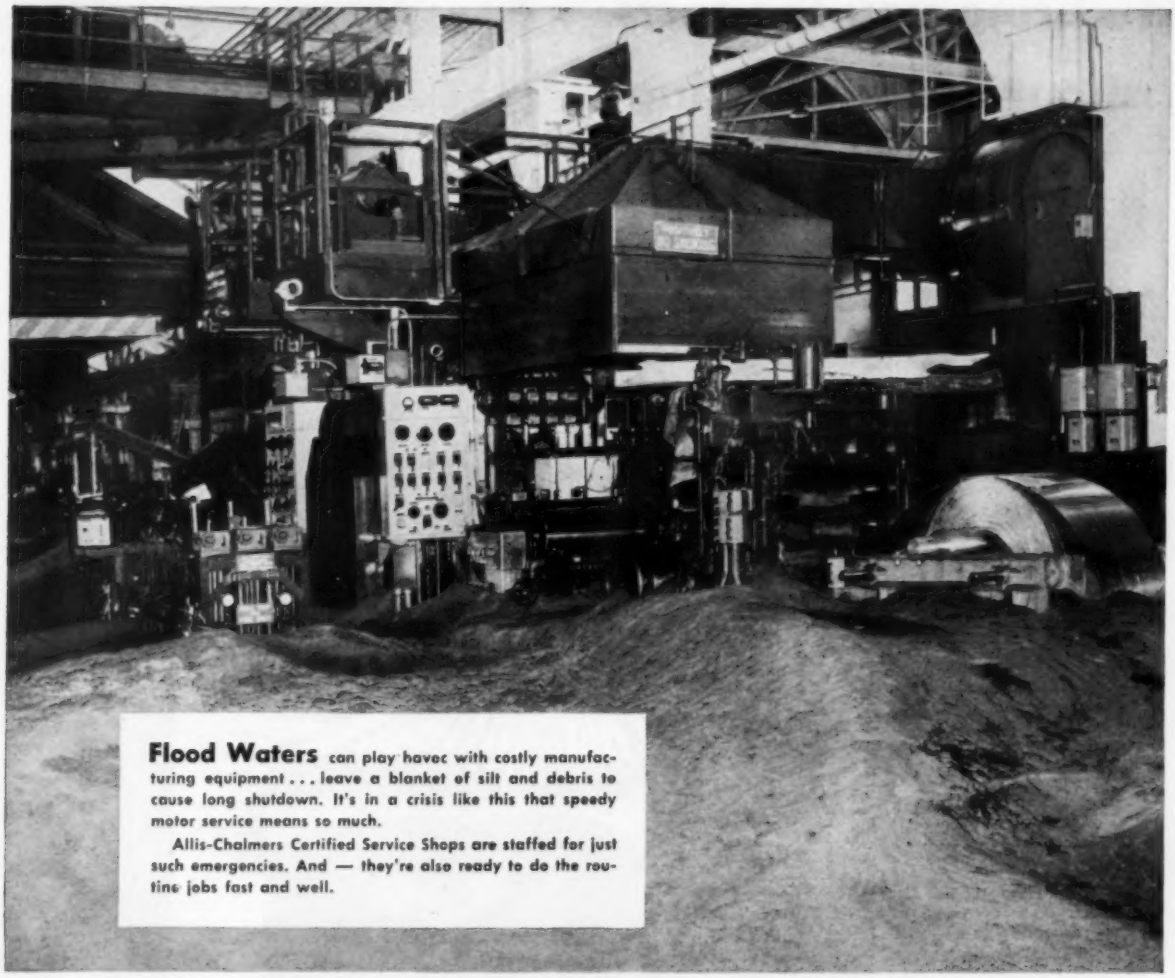
The banks, on the other hand, will argue, as did the First National City Bank of New York recently in its *Monthly Letter:* "The greatest body of beneficiaries of higher interest rates are the small savers, lacking the means to command large borrowing power, lacking developed skills in high finance, and seeking conservative investments as a measure of family security. It is this group that

*Federal National Mortgage Association.

(*Continued on page* 46)

Allis-Chalmers "Certified" Service Shops:

When you need motor help



Flood Waters can play havoc with costly manufacturing equipment . . . leave a blanket of silt and debris to cause long shutdown. It's in a crisis like this that speedy motor service means so much.

Allis-Chalmers Certified Service Shops are staffed for just such emergencies. And — they're also ready to do the routine jobs fast and well.

Catastrophe or Routine Service

Whether it's complete catastrophe or a normal repair job, fast motor service can make a difference of thousands of dollars in lost production. As near as your phone is one of more than 100 Allis-Chalmers Certified Service Shops — ready to help save you production dollars.

These shops have manpower and equipment to perform repairs to Allis-Chalmers rigid standards. Their ability and integrity have been proven by years of service. They can do a good, fast job on any motor or generator, of any make. To locate the Shop in your area, call your nearby A-C district office, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wis.

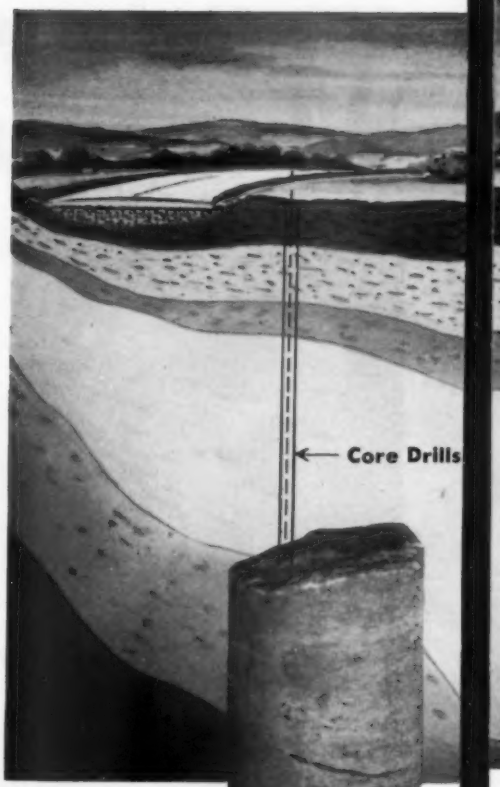
ALLIS-CHALMERS

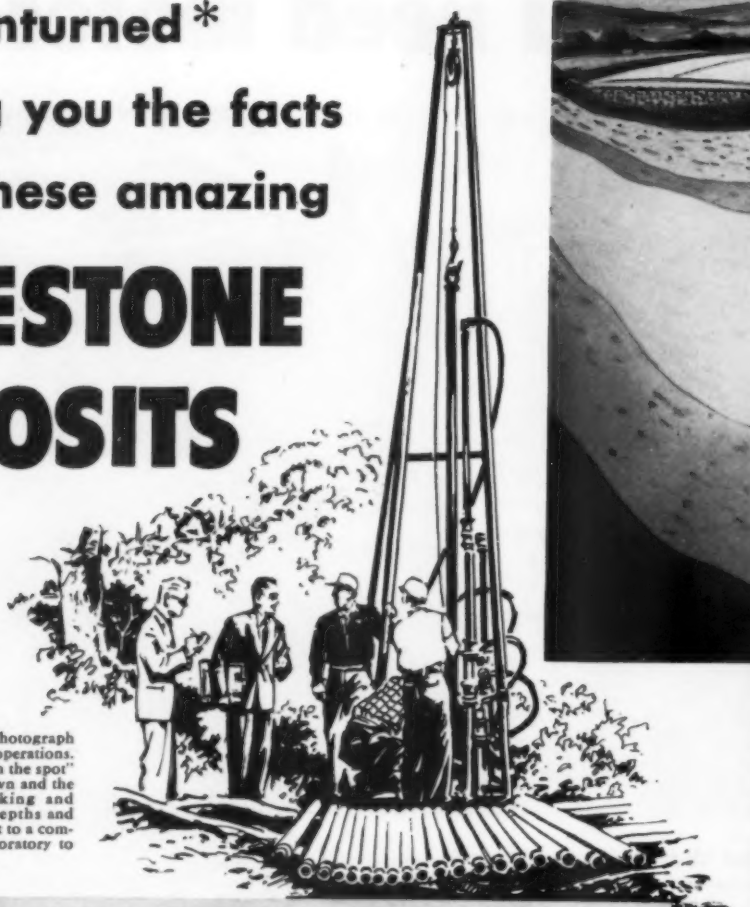
A-C ALLIS-CHALMERS

A-5140

We're leaving no stone unturned* to bring you the facts about these amazing

LIMESTONE DEPOSITS

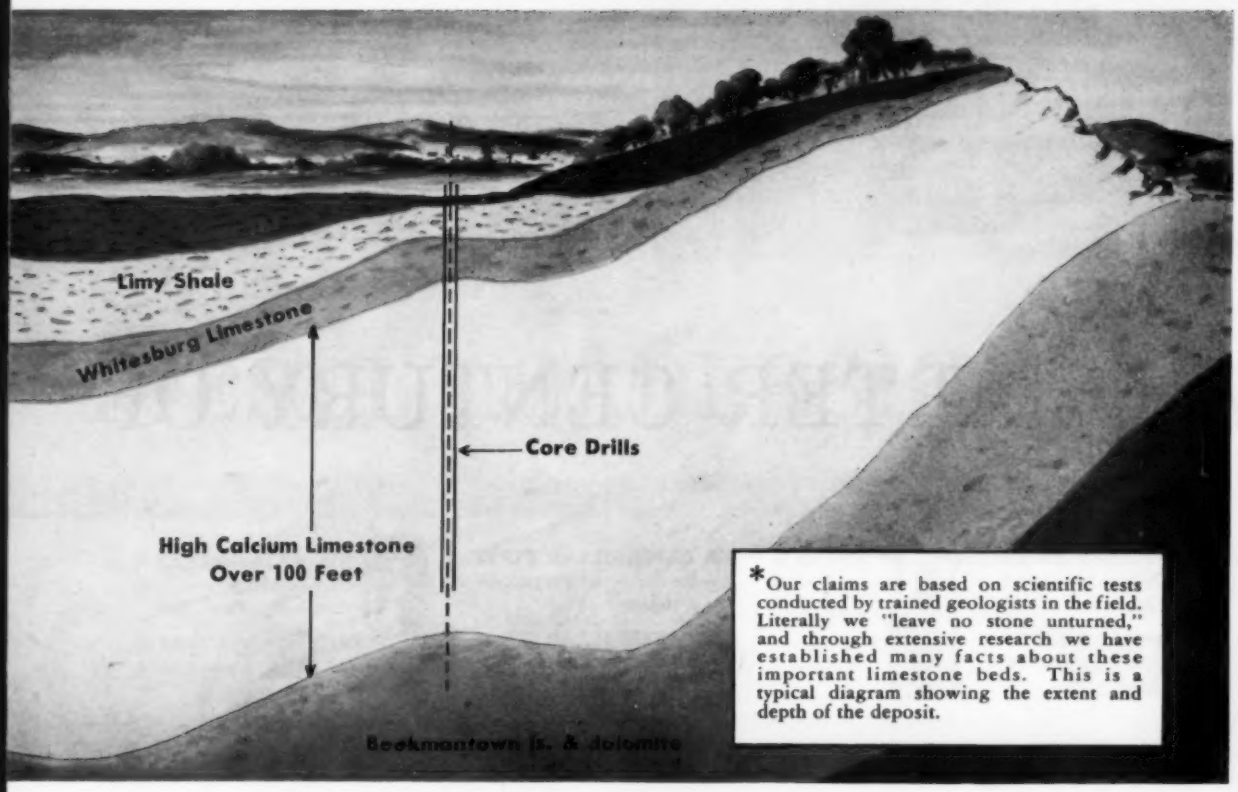




Sketch from an actual photograph during core drilling operations. N&W specialists are "on the spot" when the drill goes down and the core comes up, checking and rechecking drilling depths and locations. Cores are sent to a competent independent laboratory to test purity.

To the trained geologist outcroppings such as these mean abundant limestone, but only extensive core drilling can determine scope and depth of limestone beds.

Norfolk and



*Our claims are based on scientific tests conducted by trained geologists in the field. Literally we "leave no stone unturned," and through extensive research we have established many facts about these important limestone beds. This is a typical diagram showing the extent and depth of the deposit.

In Norfolk and Western territory there are deposits containing more than 100 million tons of limestone. Some of the beds measure over 100 feet in thickness, *and the limestone is over 97.5 per cent pure!* It can be mined or quarried economically.

These facts have been determined by the N&W's staff of plant location specialists and consultants. Further explorations and studies are being conducted in an effort to find out even more about the extent and properties of this important raw material.

If you're a limestone user and are planning a new plant, it will pay you to confirm our findings. Our plant location specialists will work with you on your particular site-seeking problem — in confidence and without obligation. The information they provide will be complete, factual and up-to-date.

And here are typical analyses

	DHL-1-1	DHL-1-2	DHL-1-3
SILICA (SiO_2)	.36%	.30%	.34%
IRON OXIDE (Fe_2O_3)	.072	.043	.049
ALUMINA (Al_2O_3)	.21	.20	.19
LIME (CaO)	55.00	54.90	55.40
MAGNESIA (MgO)	.65	.62	.51
SULPHUR (S)	.012	.011	.015
PHOSPHORUS (P)	.006	.006	.009
IGNITION LOSS	43.20	43.50	43.20
CALCIUM CARBONATE (Calculated)	97.90	97.72	98.51
MAGNESIUM CARBONATE (Calculated)	1.36	1.30	1.07

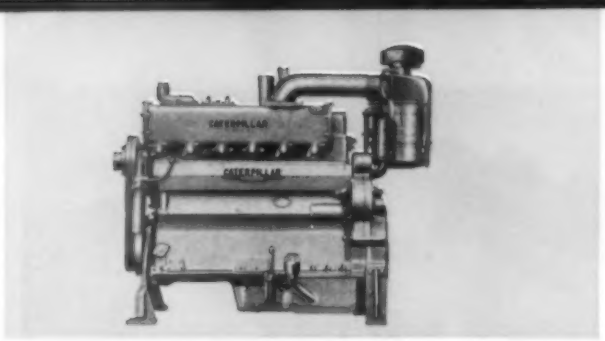
Report prepared by Pittsburgh Testing Laboratories, Pittsburgh, Pa.

This is a section of a typical core. Note the minimum of dark spots, denoting premium-grade limestone . . . ideal for chemical lime, calcium carbide and other important purposes.

Write, Wire or Call —

L. E. WARD, JR., Manager
INDUSTRIAL AND AGRICULTURAL DEPT.
Drawer PQ-737, (Phone 4-1451, Ext. 474)
Norfolk and Western Railway
ROANOKE, VIRGINIA

Western Railway



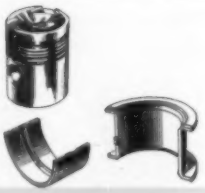
A QUARTER CENTURY OF

A CATERPILLAR FIRST
—the "Hi-Electro" hardened cylinder liner

A CATERPILLAR FIRST
—the chemically conditioned cylinder liner

A CATERPILLAR FIRST
—the stainless-steel piston protector

A CATERPILLAR FIRST
—the steel-backed aluminum bearing



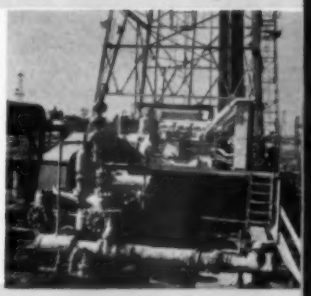
A quarter of a century ago, Caterpillar created mobile diesel power. For the first time, the power of the diesel engine was unleashed from its bulky foundations and put to work in the field—compact, economical. Here was diesel power of simple design, with no need for experts to operate and maintain. Here was diesel power with the lugging ability to knuckle down to the tough jobs.

The introduction of mobile diesel power was a tremendous advance in many fields. It provided efficient diesel power for tractors, motor graders, earthmoving equipment . . . for the work boat, the gin, the locomotive, the oil rig, the municipal plant . . . for *any* application in which steady, low-cost power is crucial. And everywhere, CAT* Diesel Engines proved themselves durable and dependable. They established Caterpillar as the leader in diesel engineering.

Today, hundreds of thousands of modern heavy-duty Cat Diesels are on the job in every corner of the world. And still the research continues. Study and experiment go ahead constantly in Caterpillar laboratories. Special testing machines help point the way toward new advances. Manufacturing techniques improve, too, in the world's largest diesel engine factory—where the quality of workmanship is the standard for the industry.

A modern world must have modern power—more and more of it. It is coming, in ever increasing quantity, from the production lines of Caterpillar, the leader.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.



CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

DIESEL POWER FOR PROGRESS

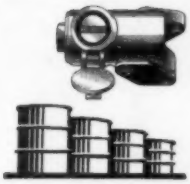
DIESEL LEADERSHIP

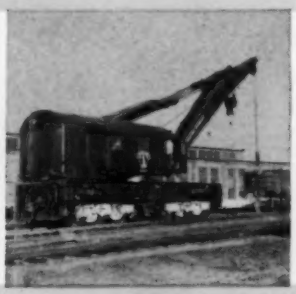
A CATERPILLAR FIRST
—interchangeable, adjustment-free fuel injection equipment

A CATERPILLAR FIRST
—the capsule-type injection valve

A CATERPILLAR FIRST
—the service meter

A CATERPILLAR FIRST
—superior lubricants (detergent oils)





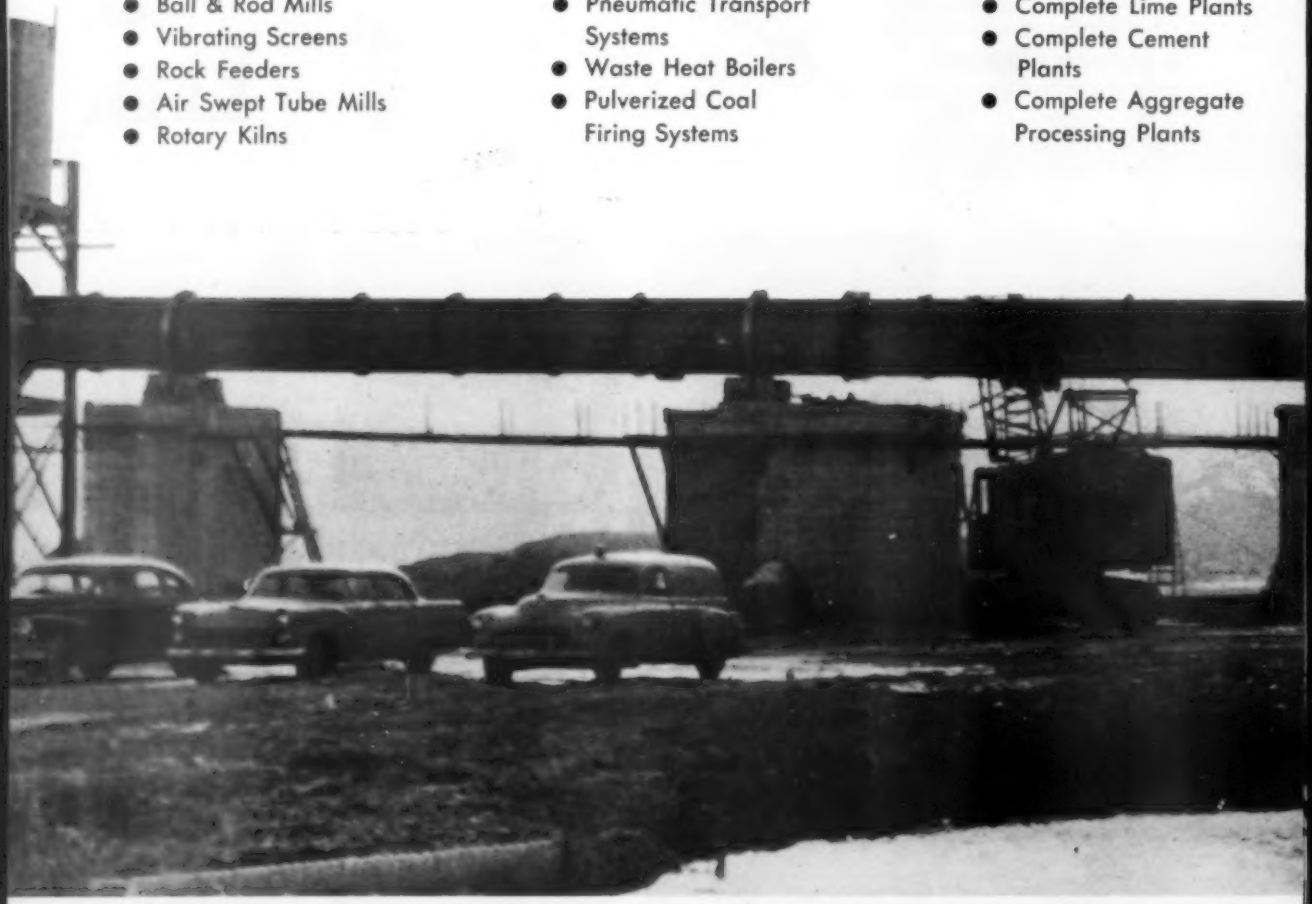
75 TON PER DAY LIME

ALL MAJOR PROCESSING EQUIPMENT DESIGNED AND BUILT BY KENNEDY

*"ON THE JOB" PHOTOS SHOWING KVS EQUIPMENT AT LINWOOD LIME PLANT

KENNEDY PRODUCTS

- Gyratory Crushers
- Swing Jaw Crushers
- Tube Mills
- Ball & Rod Mills
- Vibrating Screens
- Rock Feeders
- Air Swept Tube Mills
- Rotary Kilns
- Coolers, Dryers
- Preheaters, Deheaters
- Belts, Conveyors
- Pneumatic Transport Systems
- Waste Heat Boilers
- Pulverized Coal Firing Systems
- Steam Generators
- Asbestos Plants
- Complete Lime Plants
- Complete Cement Plants
- Complete Aggregate Processing Plants

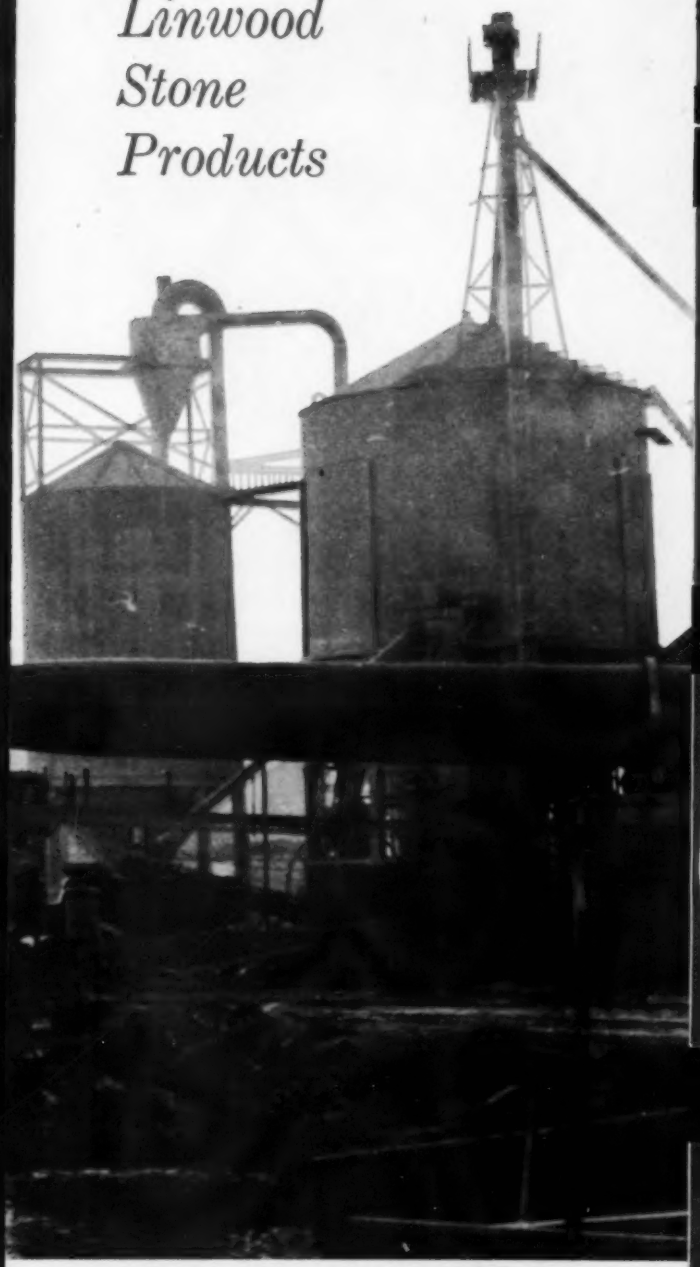


KENNEDY-VAN SAUN

MANUFACTURING & ENGINEERING CORPORATION
TWO PARK AVENUE, NEW YORK 16, N.Y. • FACTORY, DANVILLE, PA.

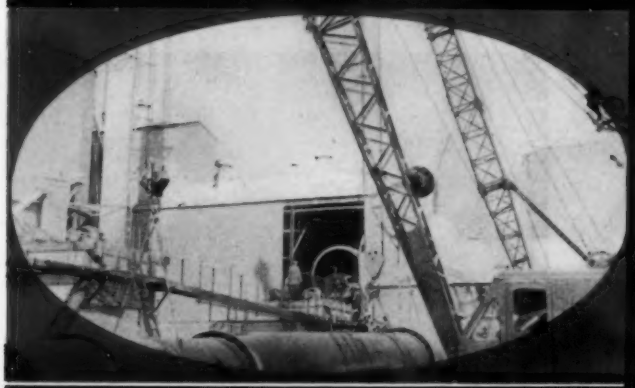
PLANT...

...at Linwood Stone Products

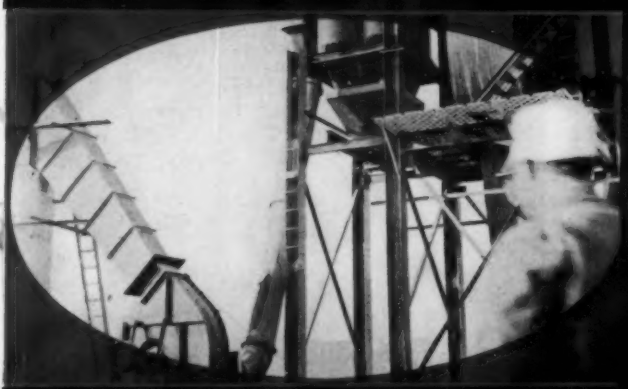


*KVS Rotary kiln 7' 6" x 6' 6" x 175' at Plant of Linwood Stone Products.

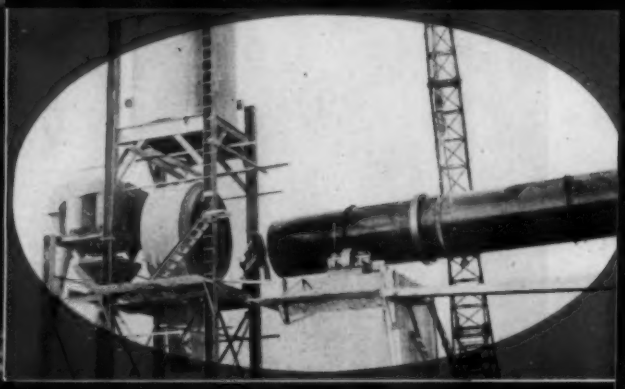
Send for Bulletin describing KVS Machinery and Equipment



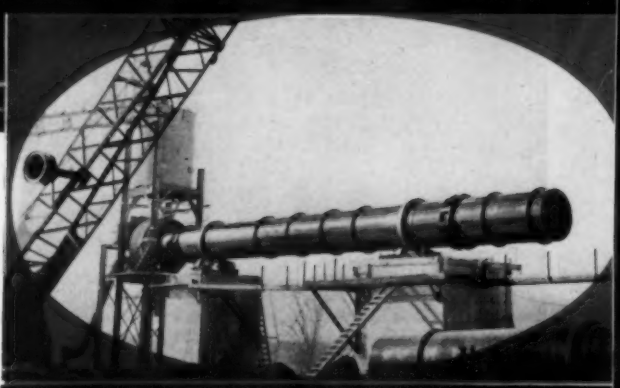
*Erecting KVS, 7' 6" x 6' 6" x 175' kiln at Linwood Stone Products.



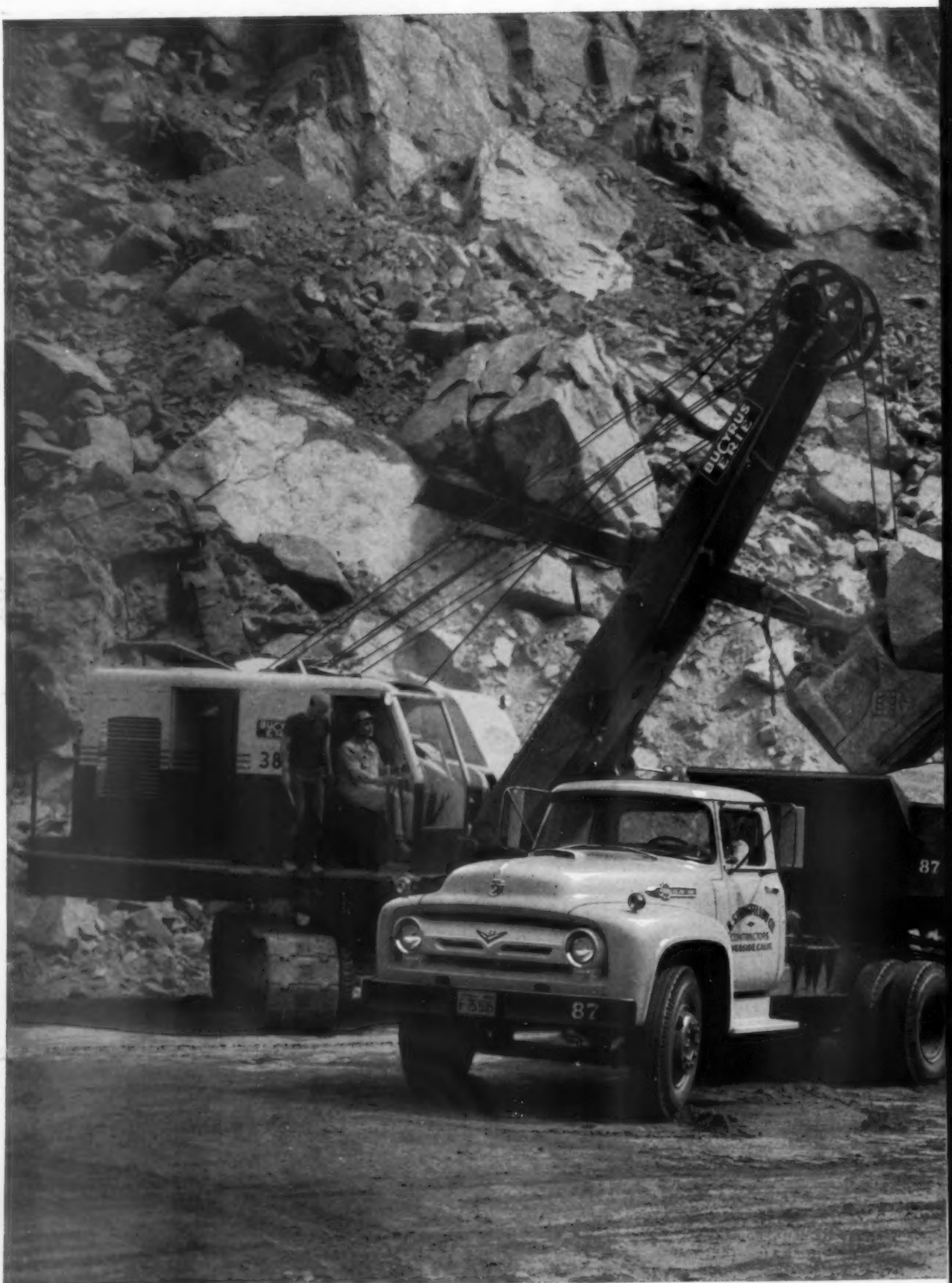
*175' KVS kiln, Dust Chamber, Dust Collectors and Induced Draft Fan.

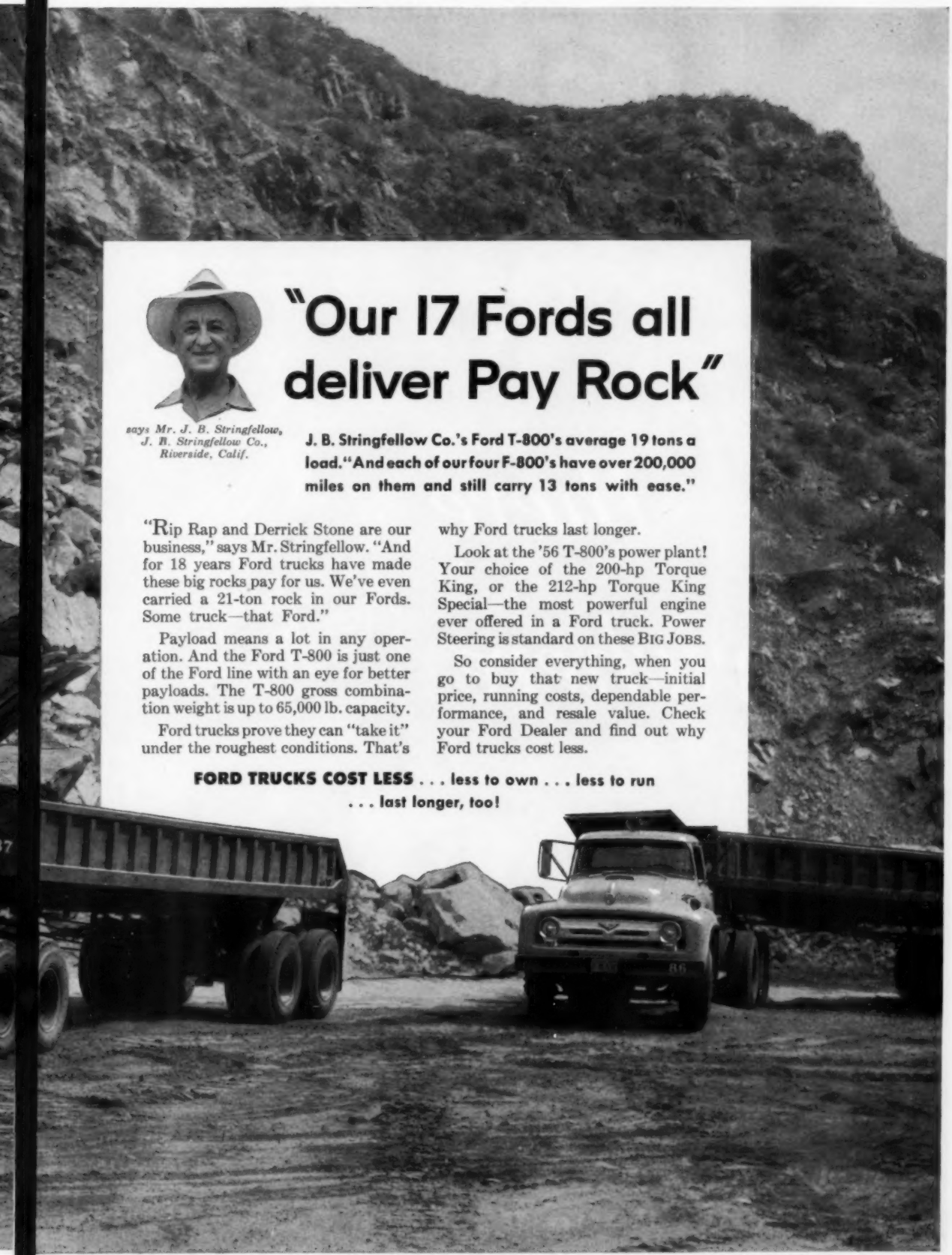


*175' KVS kiln, Feed Bin, Dust Collector and Dust Chamber.



*7' 6" x 6' 6" x 175' Rotary kiln being set on concrete piers.


BUCYRUS
87
87



says Mr. J. B. Stringfellow, J. B. Stringfellow Co., Riverside, Calif.

"Our 17 Fords all deliver Pay Rock"

J. B. Stringfellow Co.'s Ford T-800's average 19 tons a load. "And each of our four F-800's have over 200,000 miles on them and still carry 13 tons with ease."

"Rip Rap and Derrick Stone are our business," says Mr. Stringfellow. "And for 18 years Ford trucks have made these big rocks pay for us. We've even carried a 21-ton rock in our Fords. Some truck—that Ford."

Payload means a lot in any operation. And the Ford T-800 is just one of the Ford line with an eye for better payloads. The T-800 gross combination weight is up to 65,000 lb. capacity.

Ford trucks prove they can "take it" under the roughest conditions. That's why Ford trucks last longer.

Look at the '56 T-800's power plant! Your choice of the 200-hp Torque King, or the 212-hp Torque King Special—the most powerful engine ever offered in a Ford truck. Power Steering is standard on these BIG JOBS.

So consider everything, when you go to buy that new truck—initial price, running costs, dependable performance, and resale value. Check your Ford Dealer and find out why Ford trucks cost less.

FORD TRUCKS COST LESS . . . less to own . . . less to run . . . last longer, too!

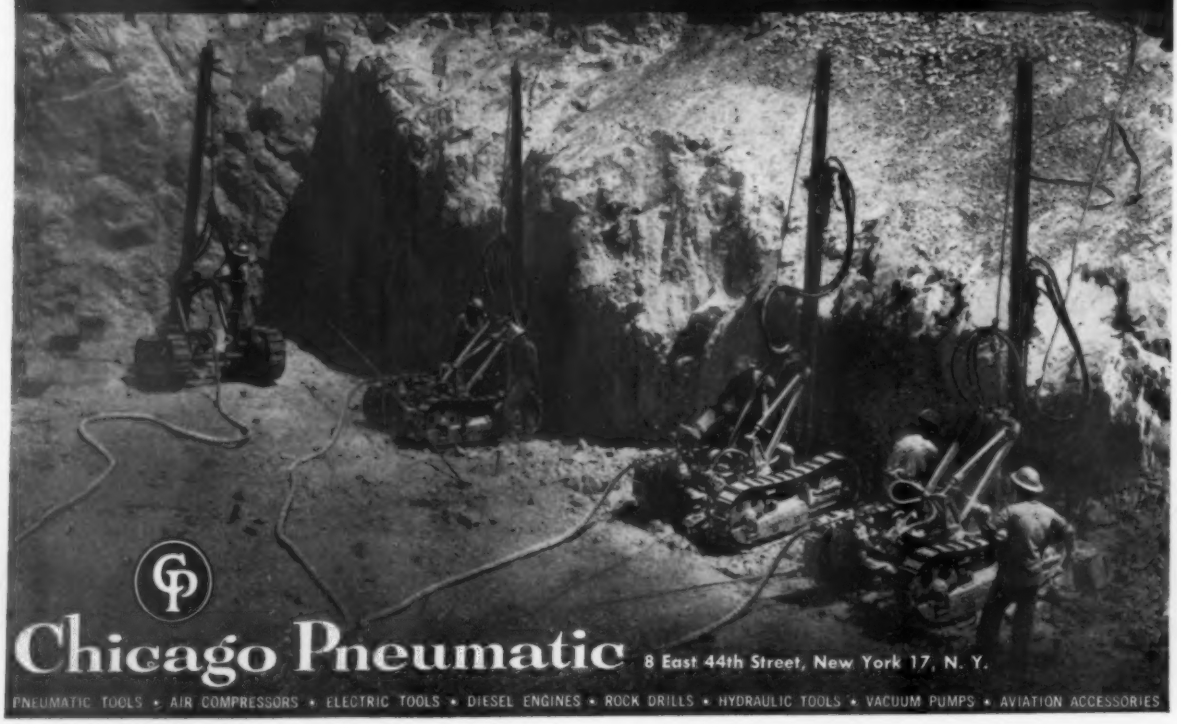
the G-800 TRACDRIL!

The self-propelled CP Tracdril pivots . . . moves forward or backward and can turn in its own length! "Tracdril" has a hydraulically actuated U-arm for fast drill carriage positioning. Can tow a 13,000 pound compressor up a 10% grade. Its "knee action" crawler tracks take rough terrain in stride. You save time moving from hole-to-hole, get more accurate spotting and gain productive drilling time.

here

there

everywhere



Chicago Pneumatic 8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

News of the Industry

Second Fluidizing Unit Producing Chemical Lime For New England Lime Co.

At the New England Lime Company's plant in Adams, Mass., a second complete Dorrco Flo Solids system has been installed for producing 100 tons of lime per day. The new unit, an improved version of the existing system, which went into operation in 1949, will replace two old rotary kilns and will produce high-quality lime with notable fuel economy. It is expected that the new unit will begin operating early next year. (See PIT AND QUARRY, May, 1956, page 122, for the complete story.)

The heart of the system, which will be installed complete with instruments and auxiliaries, is the Fluo Solids reactor, a vertical steel shell lined with firebrick and divided into five horizontal compartments—three preheating chambers, a calciner, and a cooling chamber.

Analyses of lime produced from the present Fluo Solids system show residual CO_2 content to be less than 0.5 percent, when calcining at 1,860 deg. F. Calcining to this degree in other types of units requires a temperature of 2,000 deg. F. and generally results in fluxing of impurities with the lime. A small amount of product tonnage is used for mason's lime, but the output is predominantly marketed in the field of high-grade chemical use.

Superior Portland Cement Closes Plant Temporarily

Because of an overstocked inventory at the Superior Portland Cement plant in Concrete, Wash., a complete shutdown to last about two months was ordered in September.

N. H. Peterson, superintendent of the Concrete plant, stated that all departments except the office will be closed. It was indicated that large construction companies with sizable contracts for cement were not using enough to keep storage tanks down.

New Plant to Be Constructed By Cementos California, S.A.

At Ensenada, Baja California, Mexico, ground will be broken soon for the new plant of Cementos California, S.A. This facility is expected to go into operation early next year. Much of the equipment is to be furnished by the Kennedy-Van Saun Manufacturing and Engineering Corporation and Fuller-Kinyon.

The following members of this firm's staff recently visited the Mining Congress in the Shrine Exposition Hall at Los Angeles: Rafael Uliberri, general superintendent; Francisco Ramirez, assistant superintendent; and Eugene H. McCoy, maintenance superintendent.

Coming Events

November 8-10, 1956—Hershey, Pa. Northeastern Mining Branch Conference. Lehigh Valley Section, American Institute of Mining, Metallurgical and Petroleum Engineers, host branch. Hotel Hershey.

January 15-17, 1957 — Miami Beach. 40th annual convention, National Crushed Stone Association, Americana Hotel.

January 22-23, 1957—Washington. Annual convention, National Agricultural Limestone Institute, Inc. Statler Hotel.

January 24, 1957—Washington. Annual convention, National Crushed Limestone Institute. Statler Hotel.

January 27-30, 1957 — Chicago. 38th annual meeting, Associated Equipment Distributors, Conrad Hilton Hotel.

January 28-February 2, 1957 — Chicago. 55th annual convention, American Road Builders' Association, Convention and Road Show. International Amphitheater.

February 11-14, 1957 — Los Angeles. 41st annual convention, National Sand and Gravel Association. Statler Hotel.

New Canadian Subsidiary Formed by Ideal Cement—2nd Houston Kiln Planned

Ideal Cement Company, Denver, Colo., plans to incorporate a Canadian subsidiary with headquarters at Vancouver, B. C. The new company, to be known as the Ideal Cement Company, Ltd., will be a wholly-owned subsidiary.

According to Cris Dobbins, president, the move was made in anticipation of activating Ideal's quarry holdings and the industrial site acquired in 1954.

Ideal will also start construction of a second kiln at the new Houston plant, currently under construciton and scheduled for completion by January, 1957. This kiln, expected to be in operation by June, 1957, will give the plant a capacity of 12,000 bbl. of cement per day, making it the company's largest plant.

Windsor Plaster Co. Bought By Gypsum Lime & Alabastine

P. N. Gross, president of the Gypsum Lime and Alabastine Company of Canada Limited, Toronto, has announced his company's purchase of the Windsor Plaster Company, Windsor, Nova Scotia.

Mr. Gross said no changes in personnel or policy are planned, but a "substantial" program of plant improvement will be started soon.

European Cement Plants Visited by U. S. Industrialists

Three leaders in the American cement industry spent several weeks in Belgium and West Germany last summer in search of better and cheaper production methods which can be adapted to cement manufacture in the United States.

Charles B. Baker, president of Universal Atlas Cement Company, Dr. Waldemar C. Hansen, research director for Universal, and Robert C. McDowell, chairman of the Wellman Engineering Company, visited the European plants to learn more about fuel economy and methods of reducing the dust nuisance. Wellman Engineering Company, Cleveland, Ohio, is a manufacturer of cement-making equipment.

Dodge Corp. Executive Cites Views of Economists On 1957 Business Outlook

Next year will be the best business year in history, although inflation will account for much of the rise in dollar indicators of business activity. This is the collective opinion of 221 of the nation's leading economists polled by F. W. Dodge Corporation in its annual survey of opinions on the economic outlook.

According to an analysis of the survey by George Cline Smith, Dodge vice-president, the experts believe that 1957 business will be excellent and that no downturn is in sight, even though most of them do not expect sharp increases in the major economic indicators.

Dr. Smith noted that in past surveys the panel of economists has had a good record of foreseeing turning points in these indicators. Those included in the survey panel because of their close contact with business conditions represent a wide range of industries, trade associations, government agencies, and universities.

The average forecast of these authorities, Dr. Smith said, indicates that gross national product will reach an annual rate of $420,000,000,000 by the end of next year, as compared with the $408,000,000,000 rate for the third quarter of 1956. The economists stated that they expect personal incomes, prices, and wage rates to rise moderately next year, with industrial production, business investment, and construction activity remaining at about this year's levels.

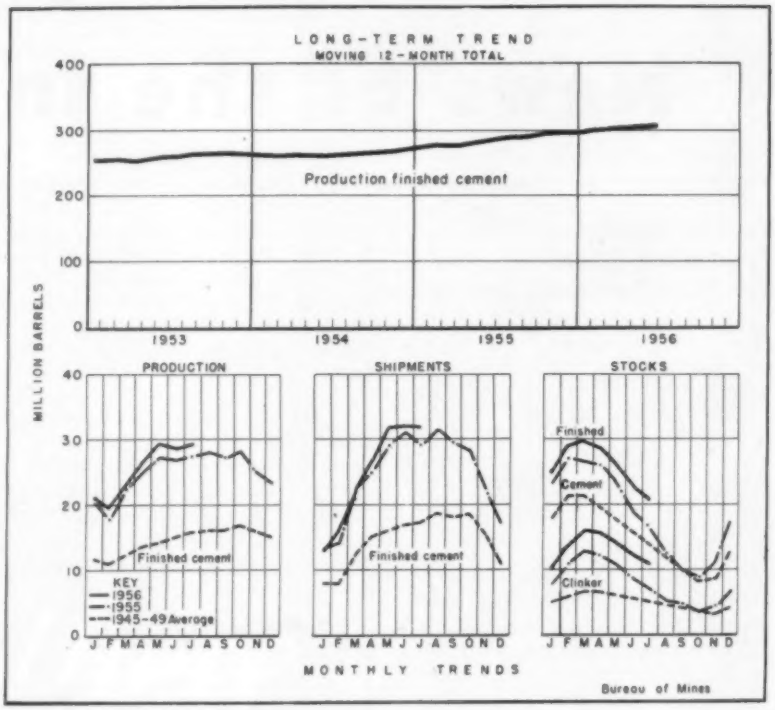
Dr. Smith said that a study of the forecasts, together with comments made by those queried, led to these three conclusions:

1. Business activity will set new records in 1957 in dollar terms, but this will be primarily the result of further shrinkage in the purchasing power of the dollar, rather than a real increase in output.

2. The consumer and wholesale price indexes will continue to rise moderately but definitely.

3. The rise in prices will be primarily the result of wage increases.

According to Dr. Smith, few of the economists feel that the outcome of the national election will have any great effect on the immediate outlook for business.



SUMMARY—Production of finished portland cement in July, 1956, as reported to the Bureau of Mines, U. S. Department of the Interior, totaled 29,498,000 barrels, an increase of 8 percent over the July, 1955, figure. Mill shipments in July, 1956, totaled 31,333,000 barrels, an increase of 8 percent over the July, 1955, figure. Stocks of 20,585,000 barrels of finished portland cement on hand July 31, 1956, were 23 percent more than that on hand July 31, 1955. Clinker production during July, 1956, totaled 28,230,000 barrels, an increase of 9 percent over the July, 1955, figure.

The July report shows the southeastern states grouped into three districts instead of one, and the Rocky Mountain states grouped into two districts instead of one as formerly.

PRODUCTION—One hundred fifty-nine (159) plants in 37 states and Puerto Rico reported a production of 29,498,000 barrels of finished portland cement during July, 1956, as compared to 27,332,000 barrels during the same month last year.

Clinker production during the month of July, 1956, was 28,230,000 barrels, as compared to 25,945,000 barrels in July, 1955.

High-early-strength portland cement produced during July, 1956, totaled 721,000 barrels, a decrease of 16 percent from the 854,000 barrels produced in July, 1955.

Prepared masonry cement produced in July, 1956, totaled 1,326,000 barrels, a decrease of 3 percent from the 1,373,000 barrels produced in July, 1955.

SHIPMENTS—Mill shipments of finished portland cement for July, 1956, totaled 31,333,000 barrels.

In July, 1956, 18 districts showed an increase in shipments over July, 1955, three showed a decrease, and two remained practically the same. The greatest increases were in the Colorado-Arizona-Utah, Louisiana-Mississippi, and Michigan districts, and the greatest decreases were in the Oregon-Washington, and Indiana-Kentucky-Wisconsin districts.

Mill shipments of high-early-strength portland cement in July, 1956, totaled 1,014,000 barrels, an increase of 3 percent over the 989,000 barrels shipped in July, 1955. Nearly half of these shipments were from mills in two districts: eastern Pennsylvania-Maryland, and Michigan. No shipments were made from mills in Puerto Rico.

Mill shipments of prepared masonry cement in July, 1956, totaled 1,457,000 barrels, an increase of 2 percent over the 1,427,000 barrels shipped in July, 1955. The northern states east of the Mississippi River shipped nearly 60 percent of total quantity shipped in the United States. Prepared masonry cements are shown in 376-lb. barrels although they are sold in barrels of varying weights.

STOCKS—Mill stocks of 20,585,000 barrels of finished portland cement were on hand July 31, 1956, 23 percent more than the 16,727,000 barrels on hand a year ago. Stocks of clinker on hand July 31, 1956, totaled 10,947,000 barrels, an increase of 51 percent over the 7,192,000 barrels on hand July 31, 1955.

Net sales of the International Minerals & Chemical Corporation, Chicago, Ill., for the fiscal period ended June 30, 1956, were $96,626,799, a slight increase over the previous all-time high of $96,485,017 for the preceding fiscal year. Net earnings after taxes totaled $5,401,723, equal to $2.14 per share of common stock, compared with $6,321,903 in 1955.

The Valley View Lime Company, Jacksonville, Pa., has purchased an aggregate plant 9 miles east of Bellefonte, Pa. The new plant, which recently went into operation, produces all sizes of road stone to conform to Pennsylvania state specifications. It includes a primary and a secondary crusher.

NO DOWN TIME

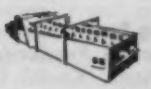
"OUR EAGLE WASHING-CLASSIFYING-DEHYDRATING PLANT HAS RUN MANY MONTHS, WITH NO DOWN TIME"

REPORTS
KNOX COUNTY SAND CO.
VINCENNES, INDIANA

THE EAGLE LINE

COARSE MATERIAL WASHERS

FINE MATERIAL WASHERS



LOG WASHERS

WATER SCALPING—CLASSIFYING TANKS

"SWINTEK" DREDGE LADDERS

CUTTER HEADS

COMPLETE DREDGES

BREAKER BALLS & PILE HAMMERS

EAGLE Aggregate Washing-Classifying-Dehydrating Equipment is outstanding for its low maintenance cost and service life. It is designed and constructed not only for top performance, but for long, dependable service as well.

Knox County Sand Co. reported that they operated as much as 60 hours per week, all through the summer of 1955 with no shut downs. This speaks well for Eagle Equipment, especially considering the large quantity of material that was processed to exact specifications by this plant.

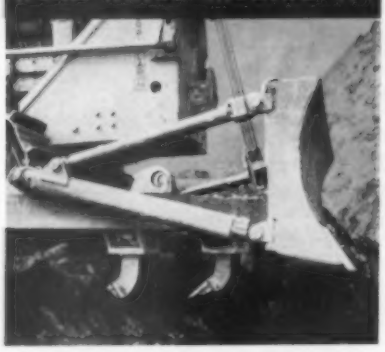
Important design features such as the Water Lubricated Hydrotex Bearings, the positive trouble-free drive, the wash water inlet manifold and the sturdy tub assure maximum service life. It requires little attention to operate or maintain Eagle Equipment—it's built for you to profit, not to pamper. Get the facts in Catalog 55.

EXPERIENCE, PROGRESS, SERVICE, SINCE 1872

EAGLE IRON WORKS

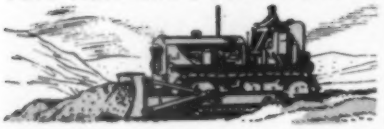
133 HOLCOMB AVE., DES MOINES, IOWA

MAKE YOUR TRACTOR WORK WHILE BACKING UP!



PRECO *Back-Rippers*

Save Time and Do More Work!



These powerful Rippers work while the tractor is backing up. They convert the bulldozer's deadhead time to work time — conditioning the ground for easier, faster dozing on the next forward pass.

Thousands of Preco Back-Rippers are in use around the world. They save time and have replaced other equipment in building pioneer roads, clearing land and rights-of-way, in gravel pit operations slate breaking in coal strip mines, mounted on pusher tractors for faster scraper loading, for logging operations and many other uses. Quickly installed on most straight and angling blade bulldozers.

See your Caterpillar Dealer or send the coupon for information.

BACK UP RIPPING

EASIER FORWARD DOZING

Preco Back-Rippers are completely automatic in operation — they dig in on the back-up trip and ride on the surface when going forward. There are no controls and, when desired, they can be locked up out of the way.

PRECO INCORPORATED
6300 E. Slauson Avenue
Los Angeles 22, Calif.

Please send information on Preco Back-Rippers.

Name_____

Address_____

Otto Frei Elected President Of Expanded Shale, Clay, Slate Inst.

New officers of the institute: Ben Park, Buildex, Inc., Ottawa, Kans., treasurer; L. A. Thorssen, Consolidated Concrete Industries, Ltd., Calgary, Alta., Canada, secretary; Otto Frei, Georgia Lightweight Aggregate Co., Atlanta, Ga., president; Bill Thomas, McNear Brick Co., San Francisco, Calif., first vice-president; and Allan Taylor, Kentucky Light Aggregates, Louisville, Ky., vice-president.

The Expanded Shale Clay and Slate Institute held its fourth annual meeting in San Francisco September 25 to 29, at the Fairmont Hotel. Frank G. Erskine, managing director of the institute, outlined events and accomplishments of the year in his report to the directors. The Technical Problems Committee reported on research projects, some in progress and others recently completed. It is planned to publish these results in data sheet form.

Since many of its original research projects have been concluded, the Technical Problems Committee is being reorganized on a broader scale to include many technical interests. The general committee is being broken down into structural and concrete masonry, both being permanent technical subcommittees. Cedric Willson of Texas Industries, Inc., Fort Worth, Tex., who has been chairman of the Technical Committee for the last four years, resigned from this post. Carl Rollins, Basalt Rock Company, Napa, Calif., was named chairman of this committee.

Cedric Willson, Texas Industries, Inc., past chairman, Technical Problems Committee, Expanded Clay, Shale & Slate Institute; and Carl Rollins, Basalt Rock Company, Inc., the newly appointed chairman of that committee.

At the invitation of their new president, Otto C. Frei—the directors of the institute decided to hold the institute's fifth annual meeting next fall in Atlanta, Ga.

The following officers were elected at this meeting: Otto C. Frei, Atlanta, Ga., president; William H. Thomas, San Rafael, Calif., first vice-president; Allan P. Taylor, Louisville, Ky., second vice-president; L. A. Thorssen, Calgary, Alta., Canada, secretary, and Ben F. Park, Ottawa, Kans., treasurer.

Members of the institute were the guests of the Basalt Rock Company, Napa, Calif., on a trip through the beautiful Napa Valley, and a tour of Basalt Rock's aggregate and precast plants.

Sand Processing Facilities Installed by Kaolin Producer

The Edgar Plastic Kaolin Company, Edgar, Fla., has completed its facilities for the production of plaster-masonry sand for the building trade, small chat for concrete block, and sand-blast grade sand.

This operation, which is automatically controlled by Minneapolis-Honeywell equipment, is reportedly the most modern in production. Current expansion plans call for the installation of drying equipment to produce other industrial grade sands.

Erection of a new office building marked the completion of the three-year expansion program of the Grand Rapids Gravel Company, Grand Rapids, Mich. The addition of a sand, gravel, and crushed stone screening plant and two ready-mix plants were other major features of the expansion.

New U. S. Highway Chief Cites Multiple Advantages Of $50,000,000 Road Plan

Bertram D. Tallamy, who is at present chairman and executive officer of the New York State Thruway Authority, was appointed by President Eisenhower on October 12 to the post of United States highway administrator. This appointment will be submitted for Senate approval next January.

In his first comprehensive statement, made before the American Society of Civil Engineers, Mr. Tallamy declared that the $50,000,000 federal road program will be the means of saving many lives and making many social and economic gains through highway improvement. He cited advantages accruing from the New York Thruway—in terms of commercial and industrial building—and mentioned the projected Illinois highway plans, for which the Federal Government will pay 90 percent of costs.

According to the Automotive Safety Foundation, the interstate system will save 35,000 lives in its first decade of operation.

Sen. Malone, Nev., Discusses Minerals at Press Conference

At a press conference held recently at the Edgewater Beach Hotel, Chicago, Ill., Senator George W. Malone of Nevada discussed the self-sufficient position attained by the United States in practically all metallic and nonmetallic mineral production.

Senator Malone also expressed the desire to protect the U. S. mineral producers from competition with lower-priced minerals produced in foreign countries.

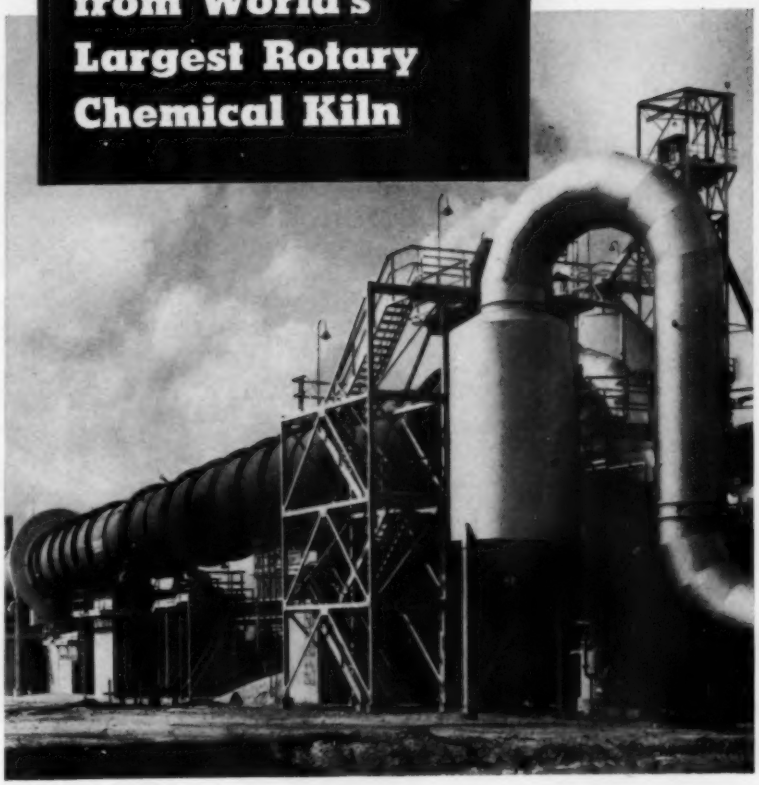
P.C.A., Gypsum Association Win Safety Council Awards

Among the 13 organizations receiving the National Safety Council's Award for Association Safety Activity at the National Safety Congress were the Portland Cement Association and the Gypsum Association.

This award recognizes outstanding safety activities including publicity, safety contests, the publication of safety materials, and co-operation with other agencies.

The Michigan Limestone Division of the United States Steel Company has acquired two vessels from the Pittsburgh Steamship Company for conversion to self-unloaders. They are the freighters *Myron C. Taylor* and the *A. F. Harvey*. The former is to be completed late this year, and the *Harvey* soon thereafter.

Peabody Scrubber Cleans Exhaust from World's Largest Rotary Chemical Kiln



In the new lithium hydroxide plant of American Lithium Chemicals, Incorporated, San Antonio, Texas, Peabody Scrubbers play a vital role by recovering valuable lithium ores from rotary kiln exhaust gases. This, the world's largest rotary chemical kiln, is served by two 11-foot Peabody units.

As in other Peabody Scrubber installations, effectiveness of recovery of fine ore particles is assured by the exclusive Peabody impingement plate design. Because of this special feature, gas and scrubbing liquid are brought into intimate contact and efficiencies of 99.8% are not uncommon in product recovery applications of this type.

Consult Peabody on any problem involving towers for scrubbing, cooling and absorbing.

PEABODY ENGINEERING CORPORATION
232 MADISON AVENUE, NEW YORK 16, N. Y.
OFFICES IN PRINCIPAL CITIES
PEABODY LIMITED • LONDON, S.W. 1, ENGLAND 6-137

BIG CAPACITY—HEAVY DUTY MACHINERY is what you need to meet today's high production demands for both cement and specification aggregate . . . *and that's what you get with the complete line of Nordberg Machinery . . .* all backed by over a half century of specialized design and manufacturing experience.

This dependable line of heavy machinery has long been recognized throughout the cement, aggregate and construction industries for maximum, continuous production of big tonnages at lowest possible cost . . . including Symons® Gyratory and Cone Crushers for primary and fine reduction crushing; Symons Vibrating Grizzlies and Screens for scalping and sizing; Grinding Mills for wet and dry grinding; Kilns and Coolers; and a complete line of Nordberg Engines from 10 to over 12,000 horsepower to meet practically all power requirements.

Write for literature on the Nordberg Machinery you need to efficiently produce large tonnages of quality cement, aggregate and sand to meet the most rigid specifications.

NORDBERG MFG. CO., Milwaukee, Wis.

© 1956, Nordberg Mfg. Co.

Q156

Typical of today's modern highway construction is this view of the new Freeway in Oakland, Calif., showing 3 levels of highway structure over 2 levels of railroad. *(Photo courtesy California Division of Highways)*

BUILD BETTER ROADS TODAY · FOR A GREATER AMERICA · See you at the ROAD SHOW CHICAGO Jan. 28-Feb. 2, 1957 · AMERICAN ROAD BUILDERS ASSOCIATION

SYMONS . . . A Registered Nordberg Trademark known throughout the world.

NORDBERG MACHINERY

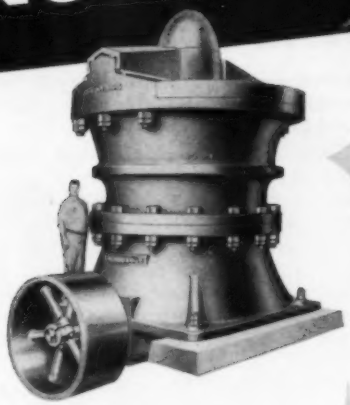
NORDBERG

SYMONS SCREENS NORDBERG

MACHINERY FOR PROCESSING ORES and INDUSTRIAL MINERALS

NEW YORK • SAN FRANCISCO • ST. LOUIS • DULUTH • WASHINGTON
TORONTO • MEXICO, D.F. • LONDON • JOHANNESBURG

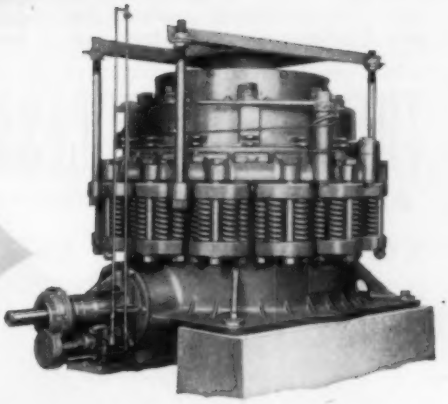
GET BIG TONNAGES OF CEMENT AND AGGREGATE WITH NORDBERG MACHINERY

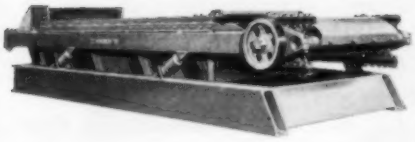


SYMONS® GYRATORY and CONE CRUSHERS

Gyratory crushers built in sizes from 30″ to 72″ feed openings, for capacities up to 3500 or more tons per hour.

Cone crushers built in Standard, Short Head and Intermediate types, in sizes from 22″ to 7′, in capacities from 6 to 900 or more tons per hour.



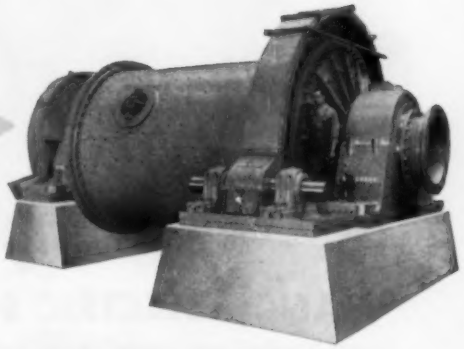


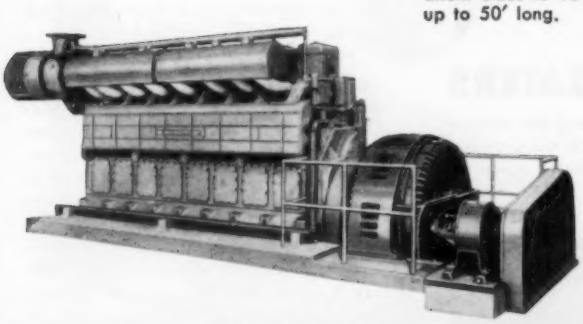
SYMONS VIBRATING SCREENS and GRIZZLIES

Built in a wide range of types and sizes to meet practically all requirements from heavy scalping to fine screening applications.

NORDBERG GRINDING MILLS

Include ball, pebble, tube, rod and compartment types for wet or dry, open or closed circuit operation. Sizes to 13′ diameter and up to 50′ long.



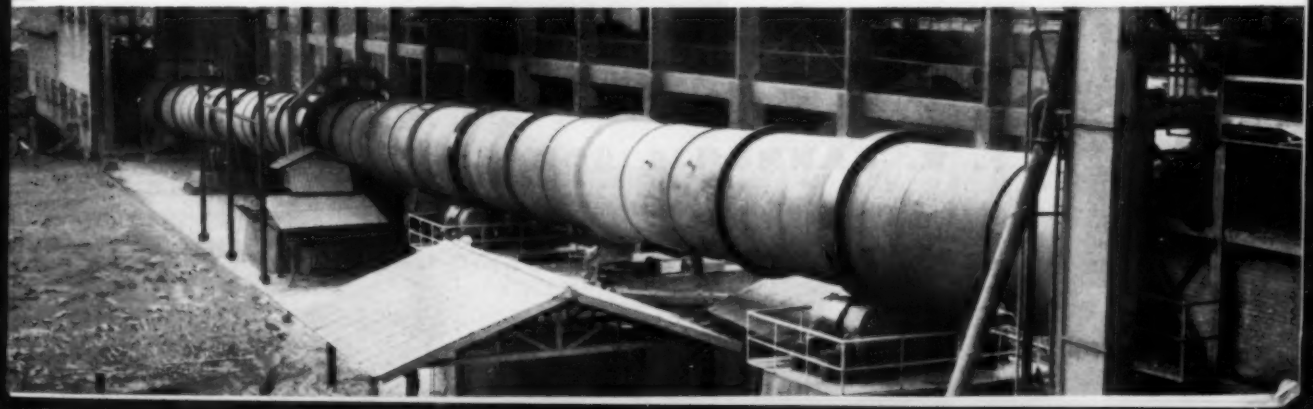


NORDBERG ENGINES

Built in a wide range of sizes from 10 to over 12,000 horsepower, including Diesel, Duafuel® and Spark-Ignition Gas types for low cost power generation.

ROTARY KILNS

Nordberg Kilns, Dryers and Coolers are built for pyro processing operations, calcining, burning and cooling.



International Minerals To Invest $3,500,000 In Skokie, Ill., Facilities

International Minerals & Chemicals Corporation has announced that it will build new general headquarters offices in Skokie, Ill., to better accommodate its expanded activities.

As presently contemplated, the cost of the new facility will approximate $3,500,000, bringing the company's total investment in Skokie, along with existing research laboratories, to $4,560,000.

In making the announcement, Louis Ware, company president, said: "The decision to construct our own headquarters results from our continued growth and constantly increasing need for additional space and greater efficiency."

Architect's model of the new Administrative Center for International Minerals and Chemical Corporation in Skokie, Ill. This view looks southwest from Edens Expressway. The Central Research Laboratory (background) was erected five years ago.

International's headquarters were moved from New York to the present location, 20 North Wacker Drive, Chicago, in 1941. The company's program of diversification launched at that time, with the acquisition of new properties across the country and expansion into new operations and products, made a geographically central location desirable.

"Since 1941," Mr. Ware explained, "our sales have increased from $13,600,000 to more than $96,600,000 for the fiscal year just ended. The new Skokie facilities will provide space for our estimated growth through 1965, and we have sufficient ground area for further expansion as needed."

He added that International, since moving to Chicago in 1941, has grown from two product divisions to six. The firm operates more than 70 mines, refineries, and manufacturing plants in 26 states and Canada.

Present plans call for the construction of three main buildings of unique, work-flow design on a 21-acre site now occupied by the company's Central Research Laboratory. Largest of the buildings, as presently contemplated, will be a five-story structure of contemporary design housing the corporate administrative offices. A second (three-story) building will house the staff and operating divisions.

Total floor area will be approximately 120,000 sq. ft. All structures will be fully air-conditioned, with radiant ceilings heat and glare-reducing, heat-absorbing windows. Curtain wall construction will be employed, with porcelain enamel panels on the exterior of the main building. Construction will begin early in 1957, with completion scheduled for mid-1958.

THE KEY TO SUCCESSFUL SCREENING

ALL NEW IN DESIGN

WRITE FOR NEW BROCHURE

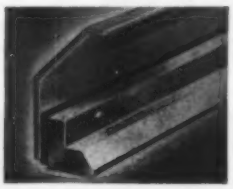
HANCO ELECTRIC SCREEN HEATERS

eliminate "blinding" and "clogging" of wire screens, thus making beating and brushing practices obsolete. Designed for heavy-duty service, HANCO Heaters with Quick Change Attachments are quickly installed and easily adapted to new or existing screen installations with such features as large capacity secondary terminal, a 16 step temperature changer, dust enclosure compact, exclusive overload protector.

EXCLUSIVE SCREEN TENSIONING DEVICE
(Replaces Existing Parts)

Fiberglass plate — insulates conductor from frame — eliminates draw bolt insulators.

Wedge-shaped conductor bars offers positive contact with cloth.



Representatives throughout the World.

F. R. HANNON & SONS

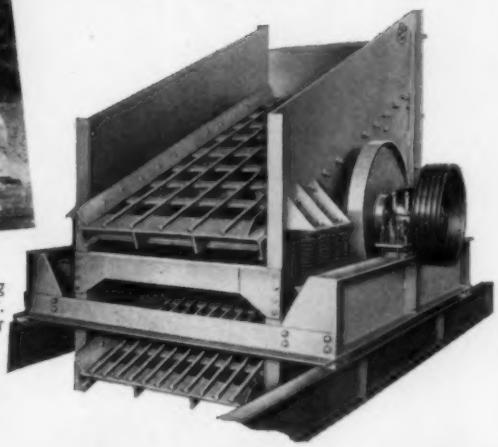
1605 Waynesburg Rd. S.E., Canton 7, Ohio

ENGINEERS — Since 1926 — MANUFACTURERS

HOW TO PICK SCREENS *that pay profits*

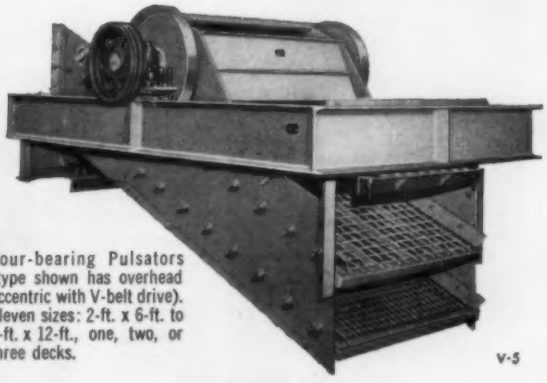
Screening aggregates is a tough job—but it can be done efficiently and at low cost—with Telsmith Vibrating Screens. This new Telsmith bulletin tells you how. It explains which type of screen is best for scalping . . . sizing . . . washing—and why Telsmith builds two types of four bearing screens and one type of two bearing screen. It describes each type; shows several new Telsmith Vibro-King features, including—new counterweight mechanism and new spring suspension, making it the smoothest and most efficient screen you can buy, either for scalping or finishing. Shows new heavy-duty tray construction; best methods for mounting screen cloth. Full of helpful pictures, diagrams and specifications.

Get this NEW BOOK FREE—Ask for No. 290



Heavy-Duty four bearing Scalpers—seven sizes: 3-ft. x 6-ft. to 5-ft. x 14-ft., one or two decks.

Two-bearing Vibro-King Screens—eleven sizes: 3-ft. x 6-ft. to 5-ft. x 16-ft., one, two, or three decks.



Four-bearing Pulsators (type shown has overhead eccentric with V-belt drive). Eleven sizes: 2-ft. x 6-ft. to 5-ft. x 12-ft., one, two, or three decks.

V-5

SMITH ENGINEERING WORKS

504 E. CAPITOL DRIVE **MILWAUKEE 1, WISCONSIN**

Representatives in Principal Cities in All Parts of the World • **Cable Address: Songworks, Milwaukee**

Kaiser Chemicals Division Producing Refractory Brick At $5,000,000 Ohio Plant

At a press tour and public dedication ceremonies held on September 28 and 29, the Kaiser Chemicals Division of Kaiser Aluminum & Chemical Corporation unveiled its new $5,000,000 plant at Columbiana, Ohio, in which production of basic refractories has already been initiated.

Designed as part of an integrated operation that starts with the quarrying and processing of raw material — dolomite — in California, the

Kaiser Aluminum & Chemical Corporation's new $5,000,000 plant at Columbiana, Ohio, constructed for the production of refractory brick. Ultimately this plant will have an annual capacity of 110,000 tons of refractory products.

Columbiana plant was built to improve service to Eastern and Midwest customers. Anticipated greater demands have been taken into consideration, with the result that prior to completion of the facility, plans were approved to expand its capacity through the addition of a third brick press. Ultimately this plant will produce approximately 110,000 tons of refractory products annually.

In addition to the periclase received in rail shipments from the West Coast, the other principal ingredient, chrome ore, used in the refractories produced, is imported from the Philippines and transshipped by rail from Baltimore.

The plant building covers an area of more than three acres, and is located on a 185-acre tract adjoining the mainline of the Pennsylvania Railroad, within a few miles of the Ohio turnpike. Equipment installed in the plant includes facilities for conveying and for storage of incoming raw material and screens, dryers, separators, mixers, brick presses, and tunnel kilns. Expansion plans already decided upon will provide additional pressing and material-handling equipment that will increase capacity by 50 percent.

Products manufactured in this new operation include basic refractory brick, ramming mixes, and furnace grains that are supplied to such customers as the steel, cement, glass, and copper industries.

The Kaiser Chemicals Division is headed by Frank M. Cashin, manager, who is corporation vice-president. E. W. Adams, who has been associated with the company's chemical operations for several years, is plant manager of the Columbiana facility.

When two rods ABRASOWELD and FACEWELD

Handle more hard-surfacing jobs...

Yet give longer wear... for less cost

WHY use anything but LINCOLN Hardsurfacing

For longer wear against abrasion, *loader paddles and bucket lips are hardsurfaced with Lincoln Faceweld 12.*

HOW TO KEEP EQUIPMENT OPERATING...*profitably*

You can reduce costly downtime by hardsurfacing vital machinery parts with Lincoln Abrasoweld or Faceweld . . .

Abrasoweld gives you exceptional resistance to severe impact and moderately severe abrasion. **Faceweld** gives you exceptional resistance to severe abrasion and moderate impact.

Write for Weldirectory SB-1352 for full details

THE LINCOLN ELECTRIC COMPANY
Dept. 5212 Cleveland 17, Ohio
The World's Largest Manufacturer of Arc Welding Equipment

PARADE OF PROGRESS

the
story
behind

TIGER BRAND WIRE ROPE

AMERICAN STEEL & WIRE DIVISION
USS
TRADE MARKS
TIGER BRAND
WIRE ROPE
UNITED STATES STEEL

1831-1956
125
YEARS
PEOPLE · PROGRESS · PRODUCTS

Celebrating our 125th Anniversary

From Hoop Skirts . . . . .to

The first successful wire making enterprise in America was started in 1831 at Worcester, Massachusetts, and became known as Washburn and Moen. This firm produced wire for the woolen industry, for screws and nails and piano wire.

The first big boom in wire making came through a whim in fashion—the hoop skirt—and Washburn and Moen took full advantage of it. They became the leading wire producer in the nation and won a reputation for quality which they never relinquished.

In 1899, during the era of big mergers, Washburn and Moen, along with many other wire making plants, were incorporated into the American Steel and Wire Company of New Jersey, which soon became a part of the United States Steel Corporation.

A few years later, American Steel & Wire began to manufacture wire rope at Trenton, New Jersey and New Haven, Connecticut. This product was highly successful. Production expanded . . . and today American Steel and Wire is the largest producer of wire rope in the world, making more than 1,000 kinds and sizes.

Your closest contact with wire rope may be a daily ride in an elevator. You see it supporting the biggest suspension bridges, and digging coal on mammoth shovels. It is used on the deepest oil wells, on ships and steel mill cranes, for highway guard rails and logging cables. Wire rope and strand are the universal tools for pulling, hauling and transporting man, his goods and materials. Write for our book on Tiger Brand Wire Rope.

AMERICAN STEEL & WIRE DIVISION,
UNITED STATES STEEL CORPORATION, GENERAL OFFICES: CLEVELAND, OHIO

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

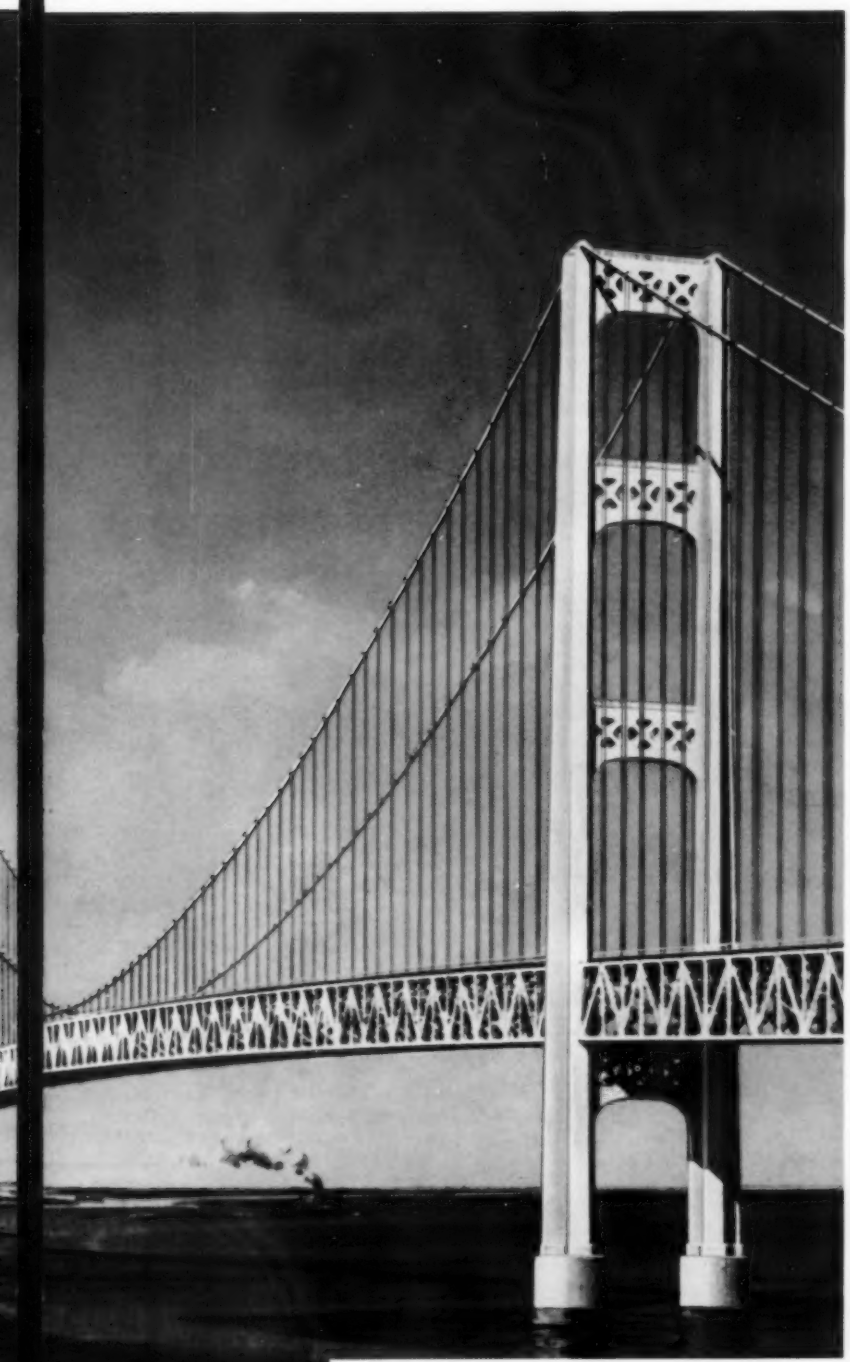
Wall of Stainless Steel Strand
Tiger Brand in one of Chicago's new parking garages. American Steel & Wire springs provide the 1,000-lb. tension to keep the strand taut.

Drilling for Oil in the Gulf of Mexico with a new type of rig equipped with 5,000 feet of Tiger Brand Drilling Line.

USS

UNITED STATES STEEL

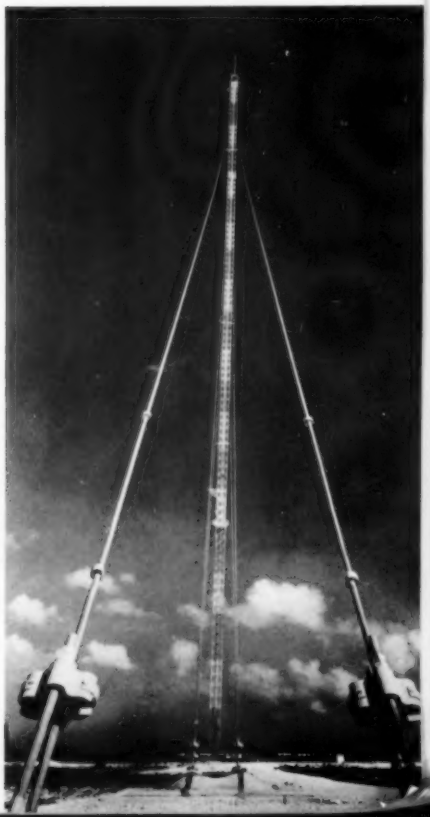
Suspension Bridges



Over 45,000 miles of wire products by American Steel & Wire will be used to complete the Mackinac bridge at St. Ignace, Michigan—longest suspension bridge in the world.

World's Largest Shovel scoops up 60 cubic yards in one bite. Tiger Brand Wire Rope provides the steel "muscles" that make it work.

Tall TV Tower for station WGBS-TV in Miami, Florida, must withstand high winds. It is supported by 1⅜" Tiger Brand galvanized strand.



Why Tiger Brand leads . . .

RESEARCH AND ENGINEERING American Steel and Wire has built up one of the finest staffs of wire rope engineers in the country, and in addition can draw from any of the basic research being performed by the United States Steel Corporation. In practice, this means that Tiger Brand Wire Rope is made from the best materials and finest steel being produced. The rope construction is engineered to fit the job . . . and you get a rope that will give the most service at the least cost.

QUALITY CONTROL This means that specified standards of quality are maintained for every step of production from ore to finished product. You can be sure of getting the same high-quality wire rope time after time. The illustration shows an electronic inspection machine, exclusive with American Steel & Wire, that detects if a wire rope imperfection exists, records it on a chart and marks the spot on the rope.

PLANT FACILITIES These are unsurpassed in the industry. American Steel & Wire can make any type and size of wire rope and strand up to the large 4-inch pre-stressed suspension ropes shown here. These ropes are being used on the Pennsylvania-New Jersey Turnpike bridge.

USS AMERICAN TIGER BRAND WIRE ROPE

UNITED STATES STEEL

USS

A.R.B.A. Meeting Agenda Includes Technical Sessions On Engineering Techniques

Gen. Louis W. Prentiss, executive vice-president of the American Road Builders' Association, recently announced the program for the 1957 convention of that group, to be held in Chicago, January 28 through February 2, at the International Amphitheater. General Prentiss stated, "We are not only going to have a grand equipment show but a high-powered program on down-to-earth engineering problems."

It is indicated that two major themes — modern engineering techniques, and future market prospects for the industry—will dominate the convention program. In a combination of technical engineering sessions, addresses by industry leaders, and panel discussions, the industry's methods of gearing up to meet a greatly expanded construction program will be reviewed.

In two general sessions, congressmen and other national leaders have consented to outline the industry's role in the national highway program. Prospects for future federal and state financing will also be discussed.

Among the subjects to be considered in the technical sessions on almost every facet of road work are the following: rigid-type pavement design and slip form paving, superhighway planning, construction practices, winter maintenance, bituminous construction of heavy-duty pavements, and county road administration. One major session will be devoted to low-cost roads, and at least seven papers have been scheduled on soil stabilization materials and methods.

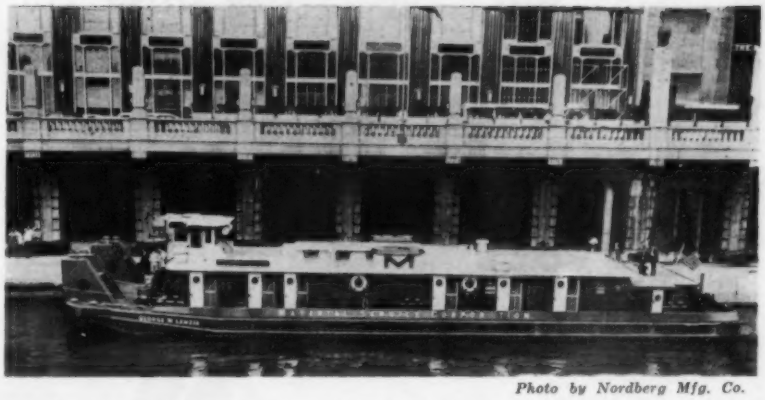


Photo by Nordberg Mfg. Co.

● Following recent christening ceremonies in Chicago, the M/V GEORGE W. LENZIE was added to the fleet of diesel towboats operated by the Material Service Corporation. A feature of this vessel—the largest and most powerful ever built for use in Chicago area waterways—is the telescoping pilothouse which allows passage under many low bridges on the waterway route.

Gypsum Output Up 10 Percent In Second Quarter of 1956

Domestic mine output of crude gypsum (2,845,955 short tons) and calcined gypsum (2,366,817 short tons) produced during the second quarter of 1956 increased 10 percent over the same period of 1955, according to figures provided by industry to the U. S. Bureau of Mines. Imports reached a new high for a second-quarter period.

All gypsum materials except plaster products and tile were manufactured in increased quantities. The gross tonnage of plaster items remained virtually constant, compared with the second quarter of 1955; but there were variations in totals of individual gypsum plaster commodities. The most significant variation occurred between base-coat and sanded and premixed perlite. The decrease in base-coat plaster products was nearly offset by the increased manufacture of sanded and premixed perlite plaster.

Output of gypsum board products (2,084,048,000 sq. ft.) continued upward, surpassing the first quarter and establishing a new record.

American Road Builders Assn. Adds W. Guy Gunn to Staff

W. Guy Gunn has been named field director of the contractors division of the American Road Builders' Association. He had been manager of the Public Works Department of the Houston Chamber of Commerce, a post in which he was concerned with highway needs studies and good-roads legislation.

After a brief period in the Washington headquarters office, Mr. Gunn will direct a membership campaign.

Flintkote Company, East Rutherford, N. J., has acquired the United States Lime Products Corporation of Los Angeles, Calif. According to I. J. Harvey, president, the acquisition was made through the purchase of 98 percent of U. S. Lime stock.

New F. L. Smidth Facility To Boost Overall Output

The new manufacturing plant of F. L. Smidth & Co., engineers and manufacturers of machinery and equipment for the cement and other industries, located at Lebanon, N. J., is an extension of the existing plant facilities nearby.

The new F. L. Smidth & Co. manufacturing plant at Lebanon, N.J.

Situated on a 65-acre tract acquired by the company last year, the plant is served by the Central Railroad of New Jersey.

Transfer of certain machinery from the existing plant has been completed, and a large number of ultra-modern machine tools have been installed. The new plant is scheduled to be in full production soon.

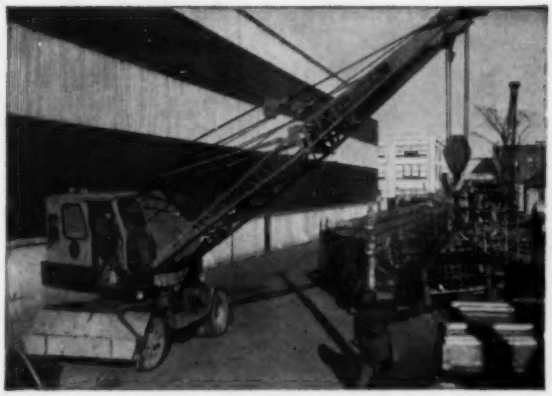
The Lebanon facilities will be coordinated with the existing plant and constitute a very substantial increase in overall machinery manufacturing capacity. Strobel and Salzman were architects and consulting engineers, and Fred J. Brotherton, Inc., Hackensack, N. J., were prime contractors.

KOEHRING WORK CAPACITY *in action . . .*

Quarry rock — Take another look at the heavy-duty shovel (above), loading rock at a Midwest quarry. It's the new Koehring ¾-yard 305, with 18-foot deep-section boom, and 15-foot dual dipper-sticks. In heavy digging like this, operators like the light lever-pull of its big power clutch, and accurate "feel" of load. *You'll* like its *extra work capacity* with all attachments, on crawlers or rubber (see ratings on next page).

Mining phosphate — After stripping overburden at a Southern mine (right), 605 dragline loaded phosphate out of the deep cut. It has plenty of work radius for this type of operation — can be used with 50 to 110 feet of boom, and handles 1½ to 2½ cu. yd. dragline or clamshell buckets, depending on weight of materials. Better check what this big Koehring 605 can do on your excavating, lifting and material-handling.

21.5 m.p.h. Cruiser® — One man controls all operations, one engine supplies all power for work and travel on the new Koehring 205 Cruiser Crane. There's a full range of low working speeds to 7 m.p.h. — plus travel speeds up to 21.5 m.p.h. Has smooth torque-converter drive, power-steering, climbs 30% grades. Usefulness is unlimited in mines, pits and quarries. It lifts up to 15 tons — handles ½ to ¾-yard clamshell or dragline buckets — converts to shovel or hoe. Versatile Koehring 205 also is available on truck mounting or on heavy-duty crawlers (more details below).



Stockpile specialist — Owner of this yard put stockpiling on a big-tonnage basis with a 405 clamshell crane. Its smooth swing, fast line speeds, and wide work radius pay off on all kinds of material-handling. This 405 is another in the modern, new series of Koehring excavators and cranes. Want more information? Call your Koehring distributor today.

Here are some figures that will interest you:

KOEHRING MODEL	SIZE DIPPER	LIFT CAPACITIES (Crawler ratings based on 75% of tipping load. Rubber-tired machines — 85% of tipping load.)	
205 CRAWLER	½-Yd.	20,000 lbs.	at 10-foot radius
205 ON RUBBER	½-Yd.	30,000 lbs. 13,700 lbs.	at 12-foot radius at 20-foot radius
305 CRAWLER	¾-Yd.	30,000 lbs.	at 12-foot radius
305 ON RUBBER	¾-Yd.	50,000 lbs. 15,800 lbs.	at 10-foot radius at 30-foot radius
405 CRAWLER	1-Yd.	40,000 lbs.	at 12-foot radius
605 CRAWLER	1½-Yds.	72,300 lbs.	at 12-foot radius
1205 CRAWLER	3-Yds.	190,000 lbs.	at 13-foot radius

KOEHRING COMPANY Milwaukee 16, Wis. Subsidiaries: JOHNSON PARSONS • KWIK-MIX

Cement Production Begins At Paulding, Ohio, Plant Of Consolidated Cement

Consolidated Cement Corporation, Chicago, Ill., has begun shipping Peninsular brand portland cements from its new 1,250,000-bbl. plant built at Paulding, Ohio, to meet the rising demand in the Ohio-Michigan-Indiana area. (The Cement City, Mich., plant, already serving this area, has a capacity of 1,200,000 bbl.)

Smith W. Storey, president, announced that the annual rated capacity of the new plant will later be raised to 2,500,000 bbl. of cement Construction of additional manufacturing facilities already has been started.

A third plant operating at Fredonia, Kan., with an annual capacity of 2,300,000 bbl., brings the total current capacity of the Consolidated Cement Corp. to 4,750,000 bbl.

Babcock & Wilcox Licensed To Use Nuclear Materials

The Babcock & Wilcox Company has become the first firm in the United States to obtain general licenses from the Atomic Energy Commission to receive and use special nuclear and nuclear source materials. This was reported at the opening of the Atomic Industrial Forum's conference in Chicago.

The licenses, each covering a five-year period ending in August, 1961, apply to fuel element production operations in the Babcock & Wilcox nuclear facilities plant in Lynchburg, Va.

National Gypsum Co. Plans $6,000,000 Wallboard Plant At 54-Acre Site in Lorain

Officials of the National Gypsum Company, Buffalo, N. Y., have announced tentative plans for the erection of a new plant at Lorain, Ohio. This facility, a wallboard plant, is expected to cost $6,000,000.

At the outset 300 workers are to be employed; and as production goes into full swing, the total may reach 500. Enough gypsum material will be made annually for 50,000 homes.

STATEMENT OF OWNERSHIP

Statement required by the Act of August 24, 1912, as amended by the acts of March 3, 1933, and July 2, 1946 (Title 39, United States Code, Section 233) showing the ownership, management, and circulation of PIT AND QUARRY published monthly at Chicago, Illinois, for October 1, 1955.

1. The names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher, PIT AND QUARRY PUBLICATIONS, INC., Chicago, Ill.; Editor, W. E. Trauffer, same; Managing Editor, W. E. Trauffer, same; Business Manager, William A. Wilson, same.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

PIT AND QUARRY PUBLICATIONS, INC., Chicago, Ill.
James E. Montgomery, same.
Evelyn W. Montgomery, same.
Stanley A. Phillips, Evanston, Ill.
Florence S. Phillips, same.
Ray L. Smith, Jr., Bartlett, Ill.
Lanetta B. Smith, same.
William T. Klussman, Brookfield, Ill.
Myrna L. Klussman, same.
Walter E. Trauffer, Evanston, Ill.
Emma M. Trauffer, same.
William A. Wilson, Winnetka, Ill.
Kathleen Wilson, same.
Chas. H. Bussmann, Lakewood, Ohio.
Jane L. Bussmann, same.
Frank J. Cornyn, Chicago, Ill.
Jeanette M. Cornyn, same.
George P. Grant, same.
Harry F. Utley, Whittier, Calif.
Melva Mae Utley, same.

William T. Klussman and Lanetta B. Smith, Trustees of Bernice Joan Smith, Trust No. 1, Chicago, Ill.

William T. Klussman and Lanetta B. Smith, Trustees of Harry William Smith, Trust No. 1, same.

William T. Klussman and Lanetta B. Smith, Trustees of Ray Light Smith 3rd, Trust No. 1, same.

William T. Klussman and Lanetta B. Smith, Trustees of Stephen Howard Smith, Trust No. 1, same.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

W. A. WILSON
Signature of Business Manager.

Sworn to and subscribed before me this 20th day of September, 1956.

(SEAL) JAMES G. KOSTKA.

(My commission expires June 27, 1957.)

STYLE PA
or Chisel Bits, provide fastest penetration in uniform rock formations

STYLE PC
or Cross Bits, operate without wedging in fissured or ravelly formations

STYLE PX
or "X" Bits, eliminate rifling and produce uniformly round blasting holes

A complete line of

KENNAMETAL* Rock Bits

...for fastest penetration...improved chip flow...
long service life with low maintenance

Kennametal offers three styles of Rock Bits. All three are of improved design. All have cutting inserts of special Kennametal grades developed for percussion drilling, which combine exceptional hardness with toughness. In addition, improved brazing techniques assure extra strong bond of insert to bit body. Each style, thus, has an optimum combination of Kennametal grade and bit design to meet specific drilling conditions.

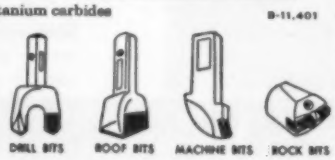
We invite you to discuss your drilling problems with a Kennametal representative. He will help you select the right style of Kennametal Rock Bits for each of your operations. Or write for additional information. KENNAMETAL INC., Mining Tool Division, Bedford, Pa.

KENNAMETAL ROCK BITS ARE AVAILABLE
- ... three styles
- ... sizes up to 5" in diameter
- ... all standard thread, including Gardner-Denver thread series
- ... for use with new high power drills, without adapters

*Trademark of a series of hard tungsten and tungsten-titanium carbides

B-11,401

INDUSTRY AND KENNAMETAL ...Partners in Progress



"Eucs" prove best investment . . .

for WYANDOTTE CHEMICALS CORP.

33,000 hours . . . still going strong!

At Alpena, Michigan, Wyandotte Chemicals Corp. has one of the world's largest limestone quarries—another job where "Eucs" are paying off in more loads per hour at less operating and maintenance cost.

Nine years ago Rear-Dump Euclids of 22-ton capacity replaced an electric haulage system for moving rock from the quarry face to the plant. These 14 "Eucs" are loaded by shovels with 5 and 6 yd. buckets. Average hourly production of each Euclid on the two-mile round trip is 75 tons on a 'round the clock schedule seven days per week. Company records show that they've worked an average of 33,000 hours each and more than 4 million ton-miles per unit.

Wyandotte standardized on Rear-Dump Euclids because of their job-proved dependability on hundreds of mine and quarry operations. Performance on the job and 9 years of experience prove this decision has paid off because "Euc" speed, efficiency and long life have increased production and lowered hauling costs for Wyandotte.

Your nearby Euclid dealer will be glad to discuss your off-the-highway hauling problems and show you why ***Euclids are your best investment.***

EUCLID DIVISION, GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

Euclid Equipment

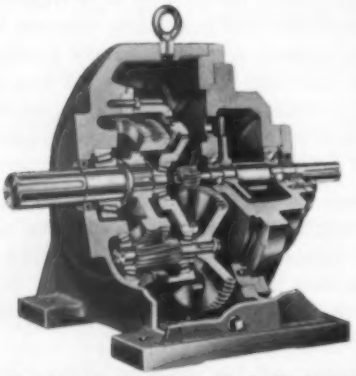
FOR MOVING EARTH, ROCK, COAL AND ORE

New IN-LINE Speed Reducers...

FLEXIBLE... ECONOMICAL... EFFICIENT

The streamlined compactness of these new units makes them ideal for mounting in places where space is limited. Accurately manufactured helical gearing, rugged housing construction and precision mounted shafts and bearings assure long, dependable service, with a minimum of maintenance. The *new* Phillie Gear "IN-LINE" Reducers are available in 18 different sizes and gear reductions to suit most types of service. Available for mounting in various positions... Standard AGMA ratios from 1.25:1 to 205:1.

Send for illustrated Literature describing these money-saving Speed Reducers.



See the newest developments in Mechanical Power Transmission at our Booth #80—22nd National Power Show, New Coliseum, New York City, November 26-30.

phillie gear®

PHILADELPHIA GEAR WORKS, INC.
ERIE AVE. & G STREET, PHILADELPHIA 34, PENNA.
Offices in all Principal Cities

INDUSTRIAL GEARS & SPEED REDUCERS
LIMITORQUE VALVE CONTROLS
FLUID MIXERS • FLEXIBLE COUPLINGS

Virginia Gear & Machine Corp. • Lynchburg, Va.

$7,000,000 Peerless Plant Begins Production in Detroit

Described as the first entirely new cement plant built in Michigan in the last 30 years, the $7,000,000 facility recently completed for the Peerless Cement Corporation near Detroit recently began producing at the initial rate of 1,250,000 tons annually. This output, added to the former 5,000,000-ton volume of Peerless Cement, will give the company nearly 30 percent of the state's total cement production.

One of the most important features of the new plant is the 450-ft. rotary kiln, longest in the state. Automation of many processes permits a crew of only 70 workers to handle a 3-shift, 7-day-a-week operation.

J. H. Daugherty, works manager of the Warren plant of the United States Gypsum Company, has announced the appointment of GUY E. HUNTER to the position of operating superintendent. Mr. Hunter will be in charge of all production and shipping operations.

Help Fight TB

Buy Christmas Seals

In 1956 the tuberculosis associations are carrying on the 50th Christmas Seal sale in the United States. The first sale of Christmas Seals was conducted in December, 1907, by Miss Emily Bissell to raise funds for a small tuberculosis hospital in Wilmington, Del. Since that year the Christmas Seal sale has spread to every state and territory of the United States.

CANCER LIFE-LINE

Through films, pamphlets, posters, exhibits and lectures, our life-line of cancer education reaches men and women in business and industry.

They learn facts about cancer which could mean the difference between life and death. For additional information about a program in your plant call the American Cancer Society or write "Cancer" care of your local Post Office.

AMERICAN CANCER SOCIETY

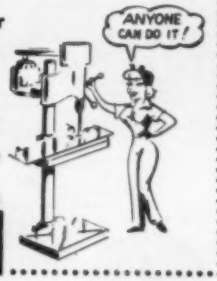
Ben Howe, Forrest City, Ark., was elected president of the newly-formed Arkansas Agricultural Limestone Association at a meeting held recently in Little Rock. Other officers include T. C. Norwood, Morrilton, vice-president, and Mrs. Ben Howe, secretary-treasurer.

ELMER R. LUX has been elected vice-president in charge of sales of the Buffalo Crushed Stone Corporatoin, Buffalo, N. Y. Mr. Lux has been president of the Buffalo Redevelopment Foundation, Inc.

FIRMEX PLATE

RESISTS ABRASION, SHOCK, FATIGUE, IMPACT AND CORROSION

- Designed for longer wear under rough usage
- Easy to machine
- Easy to weld



FOR YOUR SHAFTING USE THE BEST... USE FIRMEX

FIRMEX H. T. (Hot Rolled) or FIRMEX P. G. (Turned Ground and Polished - Close Tolerance)

High Tensile • Longer Wear • Easy Machining

INTERNATIONAL ALLOY TOOL STEEL CO.

4531-33 St. Clair Ave. Cleveland 3, Ohio

Gulf Quality Lubricants and **Fuels**
contribute to economical equipment operation
at Alabama Aggregate Company

(Below) Part of the fleet of hauling units operated by the Alabama Aggregate Company, Fortson, Ga. (Right) R. E. McWaters, Superintendent, shows Gulf Sales Engineer Charles J. Cason, Jr., a connecting rod from the engine of the diesel electric set that provides electric power for the plant. Recently disassembled for inspection, all parts of this engine were found to be in excellent condition after over 7000 hours of continuous operation with Gulf Super-Duty Motor Oil.

ASK the Alabama Aggregate people—and many other progressive organizations in the industry—why they prefer Gulf products, and you'll probably get an answer something like this: "Gulf lubricants provide an extra margin of protection for equipment, keep maintenance costs at rock bottom levels. Gulf fuels help us to get top engine performance because they burn evenly and completely. And Gulf's cooperative engineering service helps us select just the right fuels and lubricants for every piece of equipment."

The chances are your operation can also benefit from Gulf quality products and helpful service. Consult the telephone directory for the number of your nearest Gulf office, and ask a Gulf Sales Engineer to call.

Gulf Oil Corporation • Gulf Refining Company
1822 Gulf Building, Pittsburgh 30, Pa.

GULF

THE FINEST PETROLEUM PRODUCTS FOR ALL YOUR NEEDS

LUBRIPLATE
No 630-AA
IS PRACTICALLY
A UNIVERSAL
LUBRICANT
—says
THE SPOKANE PORTLAND CEMENT CO.

"With the introduction of LUBRIPLATE No. 630-AA, we were able to satisfy all our needs for solid type lubricants with only two LUBRIPLATE Products. LUBRIPLATE No. 630-AA might almost be considered a universal lubricant. Furthermore, it has effected marked savings in both lubricants and labor!"

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE

LUBRIPLATE LUBRICATION

MAKES CARS AND TRUCKS RUN BETTER AND LAST LONGER

LUBRIPLATE H.D.S. MOTOR OIL . . . THE OIL THAT NEEDS NO ADDITIVES

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

• A 1,000,000-man-hour safety award, representing the completion of 1,500 consecutive work-days without a disabling injury, is presented to Kaiser Gypsum Company by A. M. Anderson (left), supervising safety engineer of Industrial Indemnity Company's San Francisco Division. Accepting the award on behalf of the employees is Albert N. Franklin, machine operator at Kaiser Gypsum's Antioch, Calif., plant. Representing Kaiser Gypsum management are Leonard Flicker, safety director, and E. H. Shaper, plant superintendent.

H. CHAPMAN ROSE, former Under Secretary of the Treasury, has been elected to the board of directors of Basic Incorporated, Cleveland, Ohio. Announcement of the election was made by H. P. Eells Jr., president of Basic.

Celotex Corp. Expansion Including Three Plants To Total $22,000,000

Expansion projects totalling $22,000,000 have been announced by the Celotex Corporation. At L'Anse, Mich., a new fiberboard plant will be built, completion scheduled for the latter part of next year. Celotex has also purchased 242,000 acres of land near L'Anse from the Ford Motor Company and the Ford Motor Company Fund.

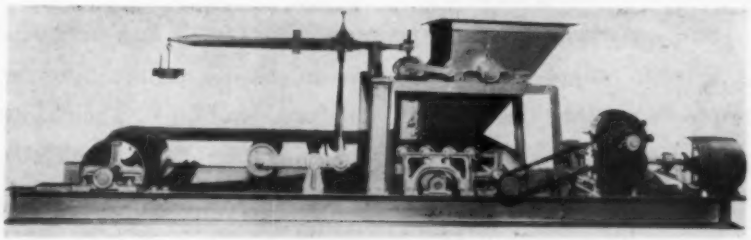
The two other major projects include a new gypsum products plant at Fort Dodge, Iowa, and a new mineral fibre acoustical tile plant near Pittston, Pa.

Newest industry in Lawton, Okla., is the Mt. Scott Materials Company rock crushing plant, being erected one mile west of the city. Anticipated capacity of that plant is 1,000 tons of crushed rock per day.

For the twelve month period ended June 30, 1956, the Dragon Cement Company, Inc., reports a net income of $2,209,387, an increase over the 1955 total of $2,079,487. Sales, less discounts, totaled $17,618,963, compared with $16,692,633 in 1955.

Send Our SCHAFFER POIDOMETERS!

OVER 1400
NOW SERVING INDUSTRY THROUGHOUT THE WORLD



"We need 'em NOW!"—that's a frequent message from Poidometer owners who expand plant facilities.

These bulk material handlers know from experience that Poidometers insure maximum efficiency in weighing, blending, feeding, mixing, recording and proportioning.

Speedy, accurate, automatic Poidometers are designed and built for years of economical scaling service.

Available with remote control weighing and recording devices, and total weight recorders.

SCHAFFER POIDOMETER CO.
2828 Smallman St. • Pittsburgh 22, Pa.

Complete Details in
CATALOG No. 5

Production Was Slow

It took only one man with a primitive wheelbarrow to haul away the production of this seventeenth-century grinding mill. For all of its grinding was accomplished by just four iron-headed stamps.

Today's grinding is as fast as yesterday's was slow. The modern mill produces many tons of ore in a single day, thus making possible our "metal age" civilization. This amazing production is possible largely because modern mills utilize efficient grinding media like the grinding balls and grinding rods produced by CF&I. Since they are always produced from special analysis steels that have the proper balance between toughness and hardness, CF&I Grinding Balls and Grinding Rods assure optimum grinding ability and maximum wearing ability.

THE COLORADO FUEL AND IRON CORPORATION

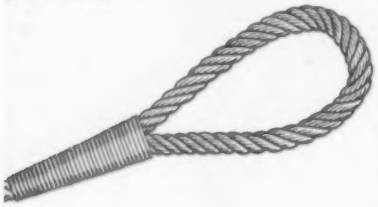
CF&I

4482

Albuquerque • Amarillo • Atlanta • Billings • Boise • Boston • Buffalo • Butte • Casper • Chicago • Denver • Detroit • El Paso • Ft. Worth
Grand Junction • Houston • Lincoln (Neb.) • Los Angeles • New Orleans • New York • Oakland • Oklahoma City • Philadelphia • Phoenix
Portland • Pueblo • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane • Wichita • CF&I OFFICES IN CANADA: Toronto • Montreal

What kind of SLINGS do you need?

Quarry and mining work demands *more* of wire rope slings than any other usage. Using the *right* sling for the *right* application can save you time and money. WIRECO not only manufactures 54 types of slings, but will make custom designs to your needs.



STANDARD

Thirteen popular types, all fabricated from a single length of Brown Strand wire rope. One-fourth inch to three inch diameters.

MAZZELLA

Multi-part slings of an exclusive design, manufactured only by WIRECO. Available in many combinations of strength and flexibility or custom made for your job. A complete variety of wire rope fittings are available.

BRAWNY BROWNIE SAYS: SEND FOR THIS SLING CATALOG

. . . it describes and illustrates **54 WIRECO SLINGS**, with capacity tables on each. It will be helpful in your office. For your copy, please write:

WIRE ROPE CORP. OF AMERICA
600 N. SECOND
ST. JOSEPH
MISSOURI

Washington News Letter

(*From page* 12.)

cheap money victimized over the 20 years of cheap money inflation."

Some imbalance appears to be developing, and an imbalance is a dangerous thing. It can trigger sharp rises and sharp declines. The new administration will have to take a hard look at the capital outlay boom. While such booms are generally regarded as desirable, it will not continue to be so if, in fact, it is feeding on other areas in the economy.

Again, Washington is up against the fact that what is done there affects very large numbers of people in very far off places. That is why so many have tried so hard recently to win a place in Washington and participate in making these decisions.

Bulldozing Phi Beta Kappa Wins Oxford Scholarship

Winning a two-year Marshall scholarship for advanced studies at Oxford University recently did not alter Robert K. Faulkner's summer routine until he sailed for England on September 25. Mr. Faulkner, a graduate of Dartmouth College and a Phi Beta Kappa, spent the summer months working on a stone crusher and occasionally operating a bulldozer at the Russo Sand and Gravel Company's plant at Bushnell Basin, N.Y.

Mr. Faulkner was appointed as one of 12 American students who annually receive the scholarships from the British government, as a British gesture of appreciation for Marshall Plan aid.

GIVE

Through YOUR
UNITED COMMUNITY CAMPAIGN

"No. 1 ROCK BUSTER"

specially designed for **QUARRY OPERATIONS**

"Cape Ann" FORGED STEEL DROP BALL

- **RUGGED DESIGN**
- **GREATER IMPACT**
- **ECONOMICAL**

Used and approved by leading quarrymen everywhere, the "Cape Ann" Drop Ball is available in weights from 2000 to 12000 lbs.

It has a forged connecting link, protected by deep recess, for swivel or shackle. Strong alloy steel pin. Low cable replacements. Furnished complete as shown.

Write Today for full details

Cape Ann Anchor & Forge Co.

Gloucester • Massachusetts

"Our Universal 293Q-Sr. portable crusher

Saves us $2400 a day in trucking costs alone"

says Mr. Ken Smith, Vice President, Princeville Stone Company, Princeville, Illinois

"We invested in the Universal 293Q-Sr. because it was the only single unit portable plant that could give us 'big stationary plant' crushing capacity. Its outstanding production record has meant more truck loads of finished material. This, combined with the plant's portability, accounts for the savings of $2400 per day in trucking costs alone. In addition, we have stepped up our jobs 25%.

"The production speed of our Universal 293Q-Sr. astounds most of the contractors in this area. They call the crusher 'hot'. It's no wonder, when you consider the size of the basic units in this plant — a 20" x 36" jaw crusher, a 30" TwinDual roll crusher and a 4' x 12' (2-5/6 deck) screen. The jaw and TwinDual rolls combine to give us three stages of rock reduction. Actually, the plant produces capacities expected of stationary plants — yet skid mounting of apron feeder and jaw crusher makes moving fast, easy and within highway weight limitations.

"Also, the Universal 293Q-Sr. is versatile. We can quickly make screening and crushing adjustments on the spot to meet state specifications. Yes, our 293Q-Sr. represents a gilt-edged investment to us", states Mr. Walter Smith, President, Princeville Stone Company, "It will bring us dividends over the next 15 years."

As shown above, the 293Q-Sr. can be easily converted to a 293QS TwinDual Gravel King by replacing the apron feeder with a scalping screen and swivel feed conveyor.

These are but a few of the important reasons why you should consider a Universal 293Q-Sr. portable crusher . . . your opportunity for additional profits on new highway program jobs. The 293Q TwinDual Pacemaker is made in three sizes (293Q-Jr., 293Q-Sr., 293Q-Super Sr.) to meet various production requirements. Write for complete information today!

PETTIBONE UNIVERSAL
In Cedar Rapids Since 1906

UNIVERSAL ENGINEERING CORPORATION

619 C Avenue, N.W., Cedar Rapids, Iowa

Subsidiary of Pettibone Mulliken Corporation, 4700 W. Division Street, Chicago 51, Illinois

1954 Census of Crushed Stone—
Preliminary Report

THE value of shipments of all crushed and broken stone quarries in the United States in 1954 amounted to $484,000,000. Of this total, shipments from quarries and plants classified in the crushed and broken stone industries were valued at $465,000,000 and shipments from quarries included in establishments classified in manufacturing and wholesale trade industries were valued at $19,000,000. These figures exclude the value of stone produced and consumed in the same establishment in the manufacture of cement and lime, amounting to approximately $100,000,000. Principal expenses for quarries and plants in the crushed and broken stone industries included $144,000,000 for wages and salaries, $89,000,000 for supplies and minerals received for preparation, $28,000,000 for fuel and purchased electric energy, and $11,000,000 for contract work.

The cost of purchased machinery installed at these quarries and plants was $45,000,000. Employment at these operations averaged about 37,000. Capital expenditures for exploration and development work, new construction, and new and used machinery amounted to $45,000,000. The total horsepower of equipment available for use was 2,762,000. Water intake for use during the year, including mine water, was 60,000,000,000 gallons.

Quarries producing crushed and broken stone, either as the major product, as a secondary product, or for consumption at an associated cement or lime plant, were operated in 47 states and in Hawaii and Alaska in 1954. The value of shipments of crushed and broken stone exceeded $15,000,000 in 1954 for each of ten states. Ranked in order of value of shipments of stone, these states were Pennsylvania, Ohio, Illinois, New York, Wisconsin, Michigan, California, New Jersey, Missouri, and Iowa. The total output of 369,000,000 tons of crushed and broken stone in the United States in 1954, including that produced and consumed in the manufacture of hydraulic cement and lime, was about 2¾ times as large as production in 1939, the year covered by the preceding Census of Mineral Industries.

The crushed and broken stone industries, as defined in the Standard Industrial Classification, represent establishments primarily engaged in mining or quarrying crushed and broken stone. In 1954 these quarries in the United States accounted for shipments of 283,000,000 tons of crushed and broken stone, valued at $434,000,000.

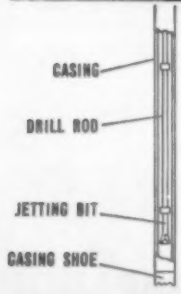
Also included in this release are statistics for crushed and broken stone quarries operated in conjunction with plants producing hydraulic cement, quicklime, or hydrated lime. If a quarry was part of such an establishment, the entire establishment was classified in the "Hydraulic Ce-

(*Continued on page* 50.)

What's down there?

Empire
TEST DRILLS
come up with the
RIGHT ANSWERS

EMPIRE
Hydraulic
Testing
Drill



This test-drilling equipment is a "must" for pit and quarry operators and general contractors.
The EMPIRE Junior Drill used manually with solid rods or the EMPIRE Hydraulic Jetting Drill, using hollow rods, is the standard method of exploring sand and gravel deposits for composition and presence of clay, and accurately determines overburden depth and formation.
Easily transported in any kind of terrain. Assembled and ready for work in minimum time with ordinary labor.

Write TODAY for complete details

NEW YORK ENGINEERING CO. 75 WEST STREET NEW YORK 6, N. Y.

LAY-SET VHS

15% Stronger

Tougher

More Wear-Resistant

67% More Wear from VHS Dragline

...for Canonie Construction Co.

• Mr. L. D. Abbey, Superintendent of Canonie Construction Company, South Haven, Michigan, says: "Our work on the excavation for the Grand Circus Park underground parking area in Detroit, Michigan, proved to us the extra toughness of new Hazard LAY-SET VHS, and the longer life you get with it.

"Our two #6 Northwest Draglines were removing 35 feet in one cut in an extremely restricted area. Because the draglines were continually dragged over broken concrete, we could only get two or three days out of the best Improved Plow Steel lines we could find. But when we switched to LAY-SET VHS we consistently got a week or more in this extremely tough service—an improvement of over 67% in service life."

New Grade of Steel—15% Stronger
New Hazard VHS Draglines are setting service records like this all over the country. Developed specifically for the toughest applications—draglines, scraper and dozer cables, shovel hoist ropes and winchlines—new VHS is made from a new grade of steel for wire rope.

This new wire rope is tougher. It resists abrasion... keeps its shape under pressure... can't become "hidebound" or lose its flexibility.

Higher Safety Factor • And new VHS is at least 15% stronger than IPS—the strongest grade formerly available. Therefore, you can handle heavier loads with the same diameter line. And you get a higher factor of safety... additional insurance against sudden overstresses.

Less "Down Time"... Saves More Money
The longer life you get with new VHS means big savings. And by cutting "down-time" of equipment for wire rope replacement, you make even bigger savings.

See Your Distributor • Your Hazard distributor has in stock draglines, scraper and dozer cables, shovel hoist ropes and winchlines of new Hazard VHS. You don't need any complicated specifications to order them. Just call him today and tell him the size and diameter you want.

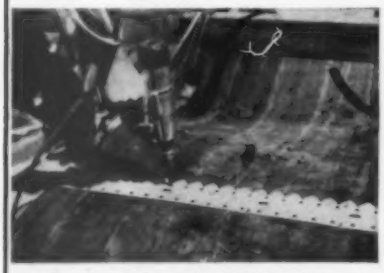
For more information see your Hazard distributor salesman or write to the nearest Hazard office for Bulletin DH-513H

HAZARD WIRE ROPE DIVISION
American Chain & Cable Company, Inc.

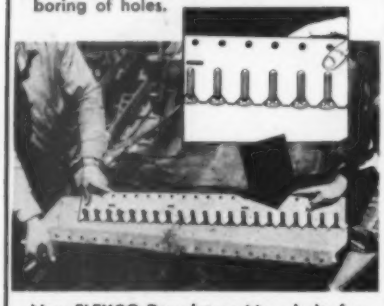
Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, Portland, Ore., San Francisco, Bridgeport, Conn.

NEW
FLEXCO
POWER TOOLS
CUT APPLICATION TIME IN HALF

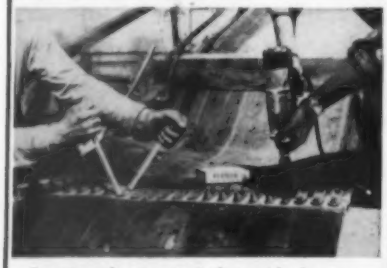
Your two man belt team can now join a belt 30" wide in 15 to 20 minutes . . . using the new FLEXCO Power Tools.



The FLEXCO Power Tool Boring Bit used with electric or air impact tool speeds boring of holes.



New FLEXCO Templet positions bolts for quick joining of belts. Reaching under belt has been eliminated.



Running down nuts is fast with the new FLEXCO Power Wrench used with electric or air impact tool. Two Bolt Breakers are used together to complete the joint.

If you are interested in speeding up fastener application, order the new Power Tools from your local FLEXCO Distributor. Write for Bulletin F-112-A.

FLEXIBLE STEEL LACING CO.

4623 Lexington Street • Chicago 44, Illinois

1954 Crushed Stone Census

(*From page* 48.)

ment" industry or in the "Lime" industry, according to whether the primary product is cement or lime. Separate statistics for 1954 relating to the quarrying activities at such establishments were obtained as part of the 1954 Census of Manufactures. In that year quarries operated in conjunction with cement or lime plants produced 70,000,000 tons of crushed and broken stone, primarily limestone, for use in associated cement or lime plants at the same location as the quarries. In addition, these quarries shipped for use elsewhere about 8,000,000 tons of crushed and broken limestone valued at $15,000,000.

Selected statistics are also shown in this release for crushed and broken stone operations at establishments where the primary product is bituminous concrete or ready-mixed concrete. Here, if a quarry was a part of such an establishment, the entire establishment was classified either in the manufacturing industry, "Paving Admixtures and Blocks" or in the wholesale trade industry, "Lumber and Construction Materials," respectively, if the value added by manufacturing exceeded the value added in quarrying. In 1954 such quarries shipped about 3,000,000 tons of crushed and broken stone, valued at $4,000,000.

This release excludes statistics for quarries operated by federal, state, and local governments and institutions. Such operations accounted for about 5 percent of the total production of crushed and broken stone in 1953, according to the Bureau of Mines.

Crushed and Broken Limestone—The value of shipments of all crushed and broken limestone quarries in 1954 amounted to $345,000,000. Of this total, shipments from quarries and plants classified in the crushed and broken limestone industry were valued at $329,000,000, and shipments from quarries included in establishments classified in manufacturing and wholesale trade industries were valued at about $16,000,000.

Quarries producing crushed and broken limestone, either as the major product, as a secondary product, or for consumption at an associated cement or lime plant, were operated in 45 states in 1954. The value of shipments of crushed and broken limestone exceeded $10,000,000 in 1954 in each of 11 states. Ranked in order of value of shipments of limestone, the five leading states were Pennsylvania, Ohio, Illinois, New York, and Michigan. The total output of 302,000,000 tons of crushed and broken limestone and calcareous marl in 1954 was about 2¾ times as large as production in 1939.

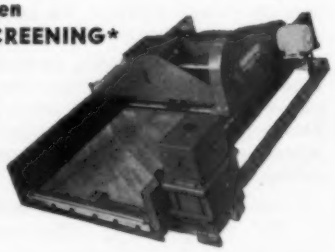
The "Crushed and Broken Limestone" industry, as defined in the Standard Industrial Classification, represents establishments primarily engaged in mining or quarrying crushed and broken limestone, including related rocks, such as dolomite, cement rock, marl, travertine, and calcareous tufa. Quarries operated in conjunction with cement and lime plants are included in this industry when separate reports are available; but the stone crushing operations performed at the plant are not included.

Crushed and Broken Granite—The value of shipments of all crushed and broken granite quarries in 1954 amounted to $31,230,000. Of this total, shipments from quarries and plants classified in the crushed and broken granite industry were valued at $30,875,000, and shipments from quarries included in establishments classified in manufacturing and wholesale trade industries were val-

The New Model E Leahy® Screen
Presents INTEGRATED HEAT SCREENING*

New construction makes FlexElex heating an integrated part of the Leahy vibrating screen . . . not just a heating attachment. Designed for highest electrical and thermal efficiency; every part, every component has been integrally engineered to put the required heat into the mesh with a minimum of current consumption.

For lime, ag-lime and silica sand, this is it!



Made by the Original Deister Company
Established 1906

* © 1956

THE DEISTER CONCENTRATOR COMPANY
911 Glasgow Avenue, Fort Wayne, Indiana

ued at $355,000.

Quarries producing crushed and broken granite either as the major product or as a secondary product were operated in 26 states in 1954, with North Carolina, Georgia, California, and South Carolina the leading states. North Carolina alone accounted for nearly 30 percent of the total value of shipments of crushed and broken granite. The 22,800,000 tons of crushed and broken granite shipped in 1954 was more than three times as large as production in 1939.

The "Crushed and Broken Granite" industry represents establishments primarily engaged in mining or quarrying crushed and broken granite, including related rocks, such as gneiss, syenite, and diorite. Nepheline syenite operations are classified in the "Clay, Ceramic, and Refractory Minerals, Not Elsewhere Classified" industry.

Crushed and Broken Slate—The value of shipments of all quarries producing crushed and broken slate as the major product amounted to $8,162,000 in 1954.

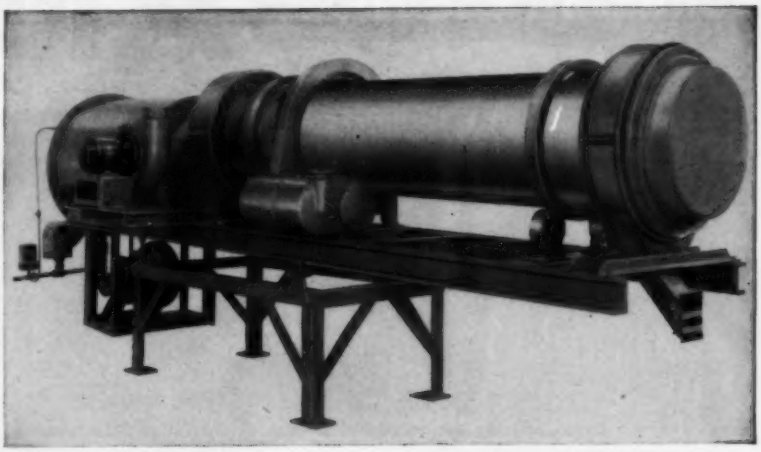
Quarries producing crushed and broken slate either as the major product or as a secondary product were operated in 10 states in 1954, with Vermont and Virginia the two leading states. The 947,000 tons of crushed and broken slate shipped in 1954 was three times as large as production in 1939. The "Crushed and Broken Slate" industry represents establishments primarily engaged in mining or quarrying crushed and broken slate, including slate granules.

Crushed and Broken Marble—The value of shipments of all quarries producing crushed and broken marble as the major product amounted to $5,142,000 in 1954.

Quarries producing crushed and broken marble either as the major product or as a secondary product were operated in 13 states in 1954, with Georgia as the leading state. The 544,000 tons of crushed and broken marble shipped in 1954 was about seven times as great as production in 1939. The "Crushed and Broken Marble" industry represents establishments primarily engaged in mining or quarrying crushed and broken marble, including serpentine (verde antique), dolomitic marble, and onyx marble.

Crushed and Broken Trap Rock—The value of shipments of all crushed and broken trap rock quarries in 1954 amounted to $46,869,000. Of this total, shipments from quarries

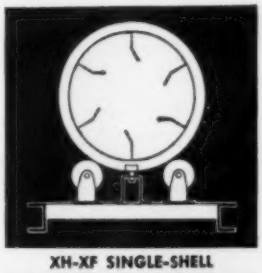
(*Continued on page* 56.)



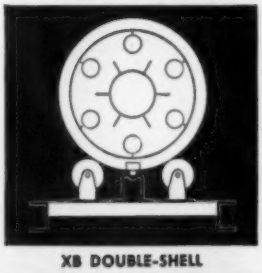
PILOT PLANT ROTARY DRYER

The Ruggles-Coles Pilot Plant Dryer is designed especially for laboratory use or for small capacity unit operations requiring a continuous or intermittent drying step. Each unit:

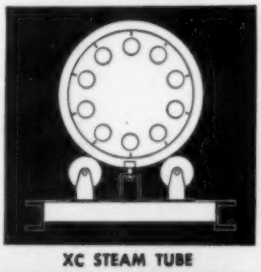
- **Is mounted on a structural steel base.**
- **Has removable "knockers."**
- **Provides for easy changing of shell rotation speed or shell slope.**
- **Is available in stainless steel or other corrosion-resistant materials.**
- **Requires only fuel supply and power connections to be placed in operation.**
- **Is easily moved from place to place.**



XH-XF SINGLE-SHELL



XB DOUBLE-SHELL



XC STEAM TUBE

It is available in three models:

(1) XH-XF single-shell, direct gas fired dryer. Arranged for either parallel or counter-flow operation. Bulletin AH-471.

(2) XB double-shell, indirect-heat, gas-fired dryer for drying without contamination. Volatiles removed with only limited dilution. Bulletin AH-472.

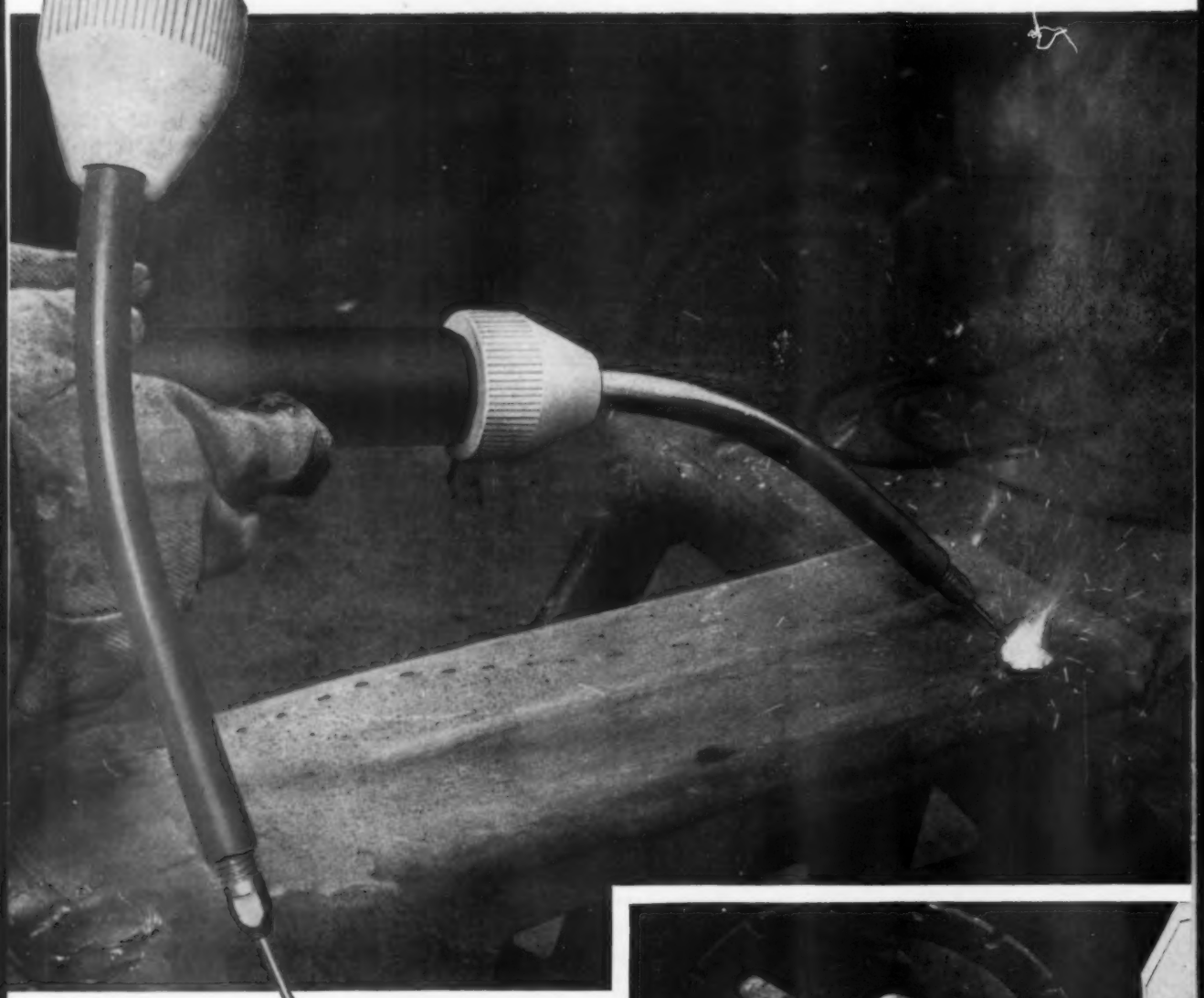
(3) XC steam-tube indirect heat dryer. Can be connected to any available steam supply or furnished with a 3-HP steam generator. Bulletin AH-473.

For full information write Department 8.

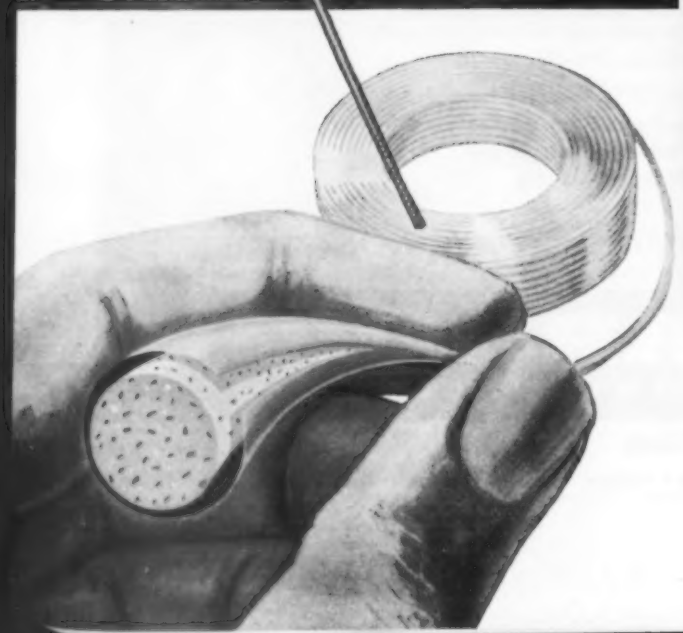
HARDINGE
COMPANY, INCORPORATED

YORK, PENNSYLVANIA • 240 Arch St. • Main Office and Works
New York • Toronto • Chicago • Hibbing • Houston • Salt Lake City • San Francisco

Announcing the NEW AMSCO



In build-up of a worn pump shell with AMSCO Tube Rod welding time was cut 50%!



The perfect uniformity of AMSCO Tube Rod insures smooth, trouble-free feed to the work. Note hardfacing alloy compactly enclosed within the steel tube.

TUBE RODS

. . . specially designed for FASTER, EASIER semi-automatic HARDFACING

Here's a new, improved Tube Rod . . . *specially designed and engineered* for semi-automatic hardfacing! It has *proved* its speed, quality of weld and uniform deposit in actual use-tests. In many cases, deposition rate has been increased up to 200% over other types of semi-automatic rod.

Amsco Tube Rod is easy to use . . . an inexperienced man can handle it with practically no training! It cuts down operator-fatigue, thus increasing productivity and reducing welding costs.

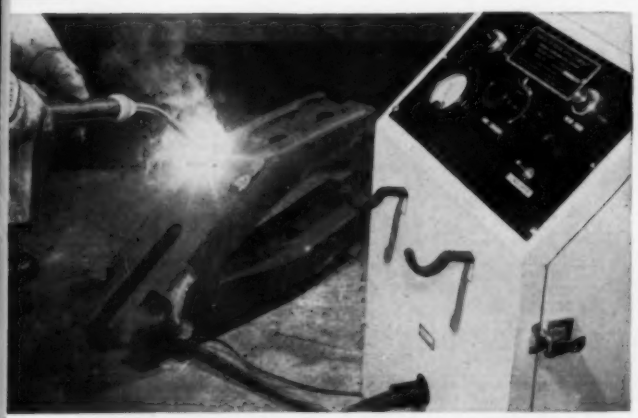
Amsco Tube Rod is a perfectly symmetrical, steel-wire shell, with the various alloys firmly enclosed within the wire, for proper weld-deposit. The steel shell is work-hardened to provide a rod that will not deform or snarl during welding . . . that is simple to drive with conventional feed rollers. Also, the rod is *automatically lubricated,* to insure constant and uninterrupted feeding to the work.

Three types of Amsco Tube Rod are available for semi-automatic welding, in 3/32" diameters only:

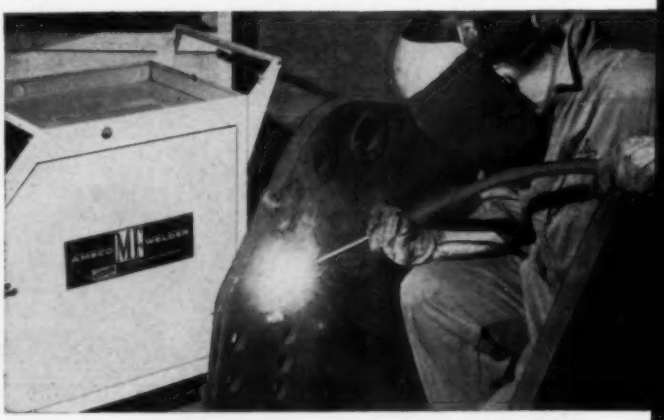
- *S/A Manganese Steel*—for all types of manganese steel build-up and repair applications.
- *S/A-53*—a high chromium alloy for general-purpose hardfacing.
- *S/A-33*—for wear resistance in severely abrasive applications.

Amsco Tube Rod is ideally suited for use with the AMSCO MF Semi-Automatic Welder . . . the most versatile and flexible welding machine for all types of shop and field applications. Or, by applying an inexpensive adapter, Amsco Tube Rod can be used with any semi-automatic machine.

For additional information and technical data on Amsco Tube Rod, see your Amsco Welding Distributor. Or write to Amsco Welding Department SA, Chicago Heights, Ill.



Build-up of a dipper base is much easier and faster with AMSCO's method of tube-rod welding.



Hardfacing the side of a backhoe bucket with AMSCO Tube Rod. Note ease of use for vertical welding in tight quarters.

Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.

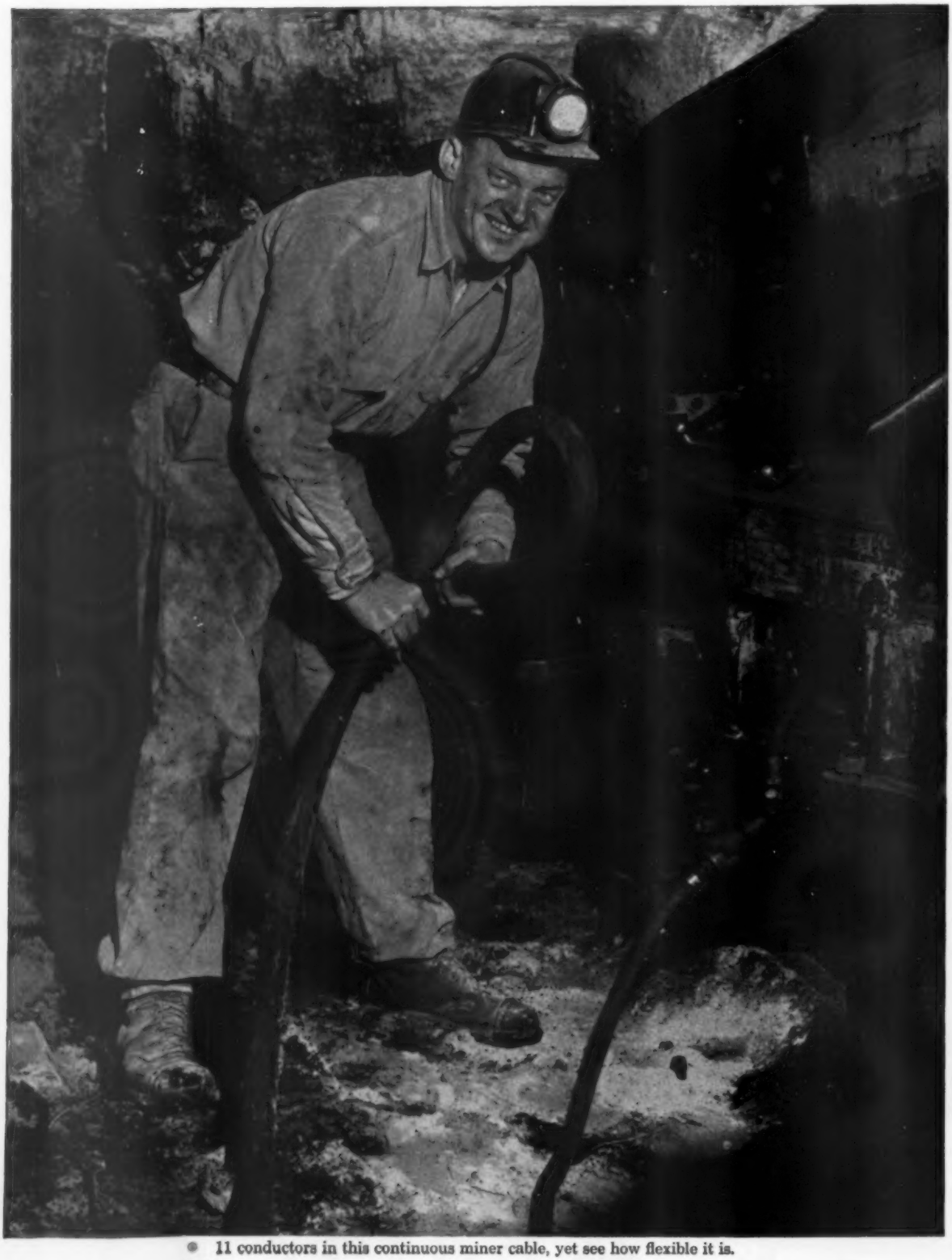
AMERICAN Brake Shoe COMPANY

AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

OTHER PLANTS IN: DENVER, LOS ANGELES, NEW CASTLE, DEL., OAKLAND, CAL., ST. LOUIS; JOLIETTE, QUEBEC

If you watch cable costs



● 11 conductors in this continuous miner cable, yet see how flexible it is.

you'll like Tiger Brand

It's always a thrill to walk into a tough, cost-conscious mine and find that they are using huge quantities of Tiger Brand Amerclad mining cable. It vindicates our attitude that mining cable *must* be built to the very highest standards.

Our flat "Bridgewall" cable is an example. Tiger Brand flat twin mining cable in sizes #1 and smaller actually has a thick wall of neoprene between the insulated conductors. It locks the conductors and ground wire (if specified) in a tight embrace and holds them there—even when the cable is badly bent or twisted. No other type of construction is so durable.

Naturally, flame-resistant jackets are used throughout. And all of these very-heavy-duty cables are vulcanized in a lead mold under pressure, to insure a dense, tough jacket. *Money cannot buy a better cable!*

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL
GENERAL OFFICES: CLEVELAND, OHIO

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

● This special cable was made for continuous miner. It contains power, grounding, lighting and communication conductors.

● Rubber-tired buggy fed with "Bridgewall" Tiger Brand. Cable is under *continuous strain.*

USS TIGER BRAND ELECTRICAL WIRE & CABLE

A STANDARD TIGER BRAND CABLE FOR EVERY SPECIAL JOB

- interlocked armor cable
- special purpose wire and cable
- asbestos wire and cable
- lead cured portable cord
- paper and lead cable
- aerial, underground and submarine cable
- shovel and dredge cable
- varnished cambric cable

USS

UNITED STATES STEEL

1954 Crushed Stone Census

(*Continued from page* 51.)

and plants classified in the crushed and broken trap rock industry were valued at $45,471,000, and shipments from quarries included in establishments classified in manufacturing and wholesale trade industries were valued at $1,398,000.

Quarries producing crushed and broken trap rock either as the major product or as a secondary product were operated in 16 states in 1954, with New Jersey and Pennsylvania together accounting for almost one-half of the value of shipments of crushed and broken trap rock. The 23,600,000 tons of crushed and broken trap rock shipped in 1954 was about 2⅓ times as great as production in 1939. The "Crushed and Broken Trap Rock" industry represents establishments primarily engaged in mining or quarrying crushed and broken trap rock (basalt, diabase, gabbro, and related rocks).

Crushed and Broken Sandstone—The value of shipments of all quarries producing crushed and broken sandstone as the major product amounted to $31,190,000 in 1954.

Quarries producing crushed and broken sandstone either as the major product or as a secondary product were operated in 28 states in 1954, with Wisconsin, West Virginia, and Pennsylvania leading. The 9,600,000 tons of crushed and broken sandstone shipped in 1954 were more than 3½ times as great as production in 1939. The "Crushed and Broken Sandstone" industry represents establishments primarily engaged in mining or quarrying crushed and broken sandstone, including quartzite, and ganister.

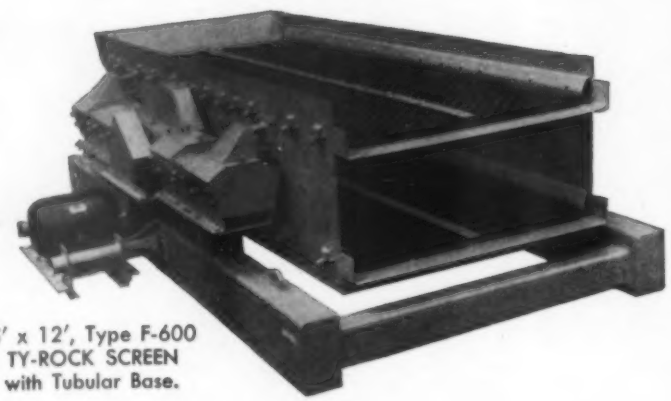
Crushed and Broken Stone, Not Elsewhere Classified—The value of shipments of all quarries producing miscellaneous crushed and broken stone in 1954 amounted to $16,203,000. Of this total, shipments from quarries and plants classified in the crushed and broken stone, not elsewhere classified, industry were valued at $15,657,000, and shipments from quarries included in establishments classified in manufacturing and wholesale trade industries were valued at $546,000.

Quarries producing miscellaneous crushed and broken stone either as the major product or as a secondary product were operated in 34 states in 1954. The two largest producing states were California and Arkansas. The 8,900,000 tons of miscellaneous crushed and broken stone shipped in 1954 was 2¼ times as large as production in 1939. The "Crushed and Broken Stone, Not Elsewhere Classified," industry represents establishments primarily engaged in mining or quarrying crushed and broken stone, not elsewhere classified, such as various light-colored volcanic rocks, mica schist, and mixed boulders.

General—These statistics are derived from preliminary tabulations of reports received in the 1954 Census of Mineral Industries. Final and more detailed figures will appear in the Census Bulletin, *Crushed and Broken Stone,* which will be published and offered for sale by the Superintendent of Documents in the near future. Similar preliminary and final releases are being issued for other industries. The 1954 Census of Mineral Industries is the 13th such census of the United States. Prior to 1939 minerals censuses had been conducted at about ten-year intervals for a century. Such a census can now be made every five years.

Regular shipments of clinker have begun from the United States Steel plants at Gary, Ind., to the new facility of its subsidiary, Universal Atlas Cement Company, at Milwaukee, Wis. The self-unloader *B. H. Taylor* delivered its first cargo of clinker at the Universal Atlas dock in Milwaukee on September 24.

FOR PROFITABLE SCREENING USE



5′ x 12′, Type F-600 TY-ROCK SCREEN with Tubular Base.

TYLER VIBRATING SCREENS AND TYLER WOVEN WIRE SCREENS

There is a Tyler Vibrating Screen for every sizing and dewatering job. Tyler Screens are noted for the huge tonnages handled with top efficiency and low cost per ton.

Tyler Woven Wire Screens are made in all meshes and metals in over 10,000 different specifications. Ton-Cap and Ty-Rod Screens with the long-slot openings provide the greatest capacity for a given discharge area.

THE W. S. TYLER COMPANY
CLEVELAND 14, OHIO
Manufacturers of Woven Wire Screens and Screening Machinery

Raves for no ravin' beauty...

"What a beating! But in 12 years, trucks have never had a lubrication failure!"

FOX RIVER'S MIGHTY MACHINES all provide trouble-free performance using Cities Service Gasolene, Diesel Fuel, and Lubricants. These outstanding products help the company operate at 150 tons per hour.

THAT'S DUST, BROTHER! This motor, buried in dust, is typical of operating conditions at Fox River Stone Company. Yet, using Cities Service Pacemaker Oil, there's never been a bearing failure. Never any lubrication problems.

Fox River Stone Company, Elgin, Illinois, reports trucks wear out externally, are still good internally using Cities Service Lubricants.

Operating at the rate of 150 tons per hour under the toughest conceivable quarry conditions, Fox River Stone Company produces barn and agricultural lime, 2" and 3" stone for road construction, "A" and "B" binder for asphalt road construction, flagstones, and a host of other crushed stone products.

Yet, during the last 12 years, there's never been a lubrication failure of any kind in any piece of machinery using Cities Service Lubricants.

With the aid of Cities Service Gasolene, Diesel Fuel, and Trojan H-2 Multi-Purpose Grease, Fox River's many shovels, pay loaders, and trucks have given constantly flawless performance. And despite the extremely dusty quarry conditions, exposed electric motors have never lost a bearing using Pacemaker 150 T Lubricating Oil.

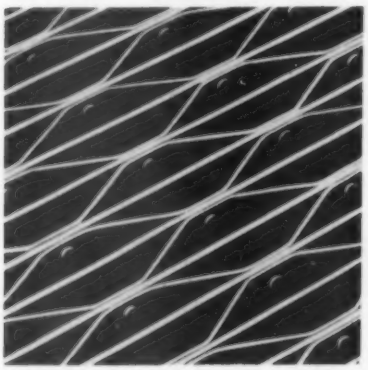
Not one lubrication failure in any of this equipment during 12 years of rugged operation! That's Fox River's record with Cities Service and it can be your record when you start using Cities Service Products. For information, talk with your nearest Cities Service representative or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

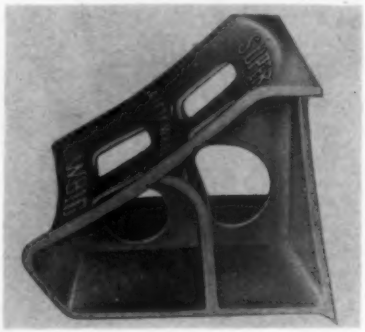
New Machinery
and Equipment

For Further Information Use Card on Pages 101-102



• Skid-proof serrated safety grating, manufactured by the Klemp Metal Grating Corporation, is recommended as an accident preventative measure for installations exposed to snow, ice, mud, oil, and other wet or slippery conditions. Welded and riveted serrated safety gratings are available in carbon steel and stainless steel. Riveted safety grating is also available in aluminum and monel. **(51)**

• Redistribution of weight, a simplified lifting mechanism, and the elimination of conventional trailer frames combine to make possible the increased payload capacity of this new tandem-axle frameless dump trailer available from the Anthony Manufacturing Company. The body serves as its own frame; the axle as the hoist hingepoint. The high tensile steel body, Anthony Model RL-66, is 21 ft. long and has a capacity of 17 cu. yd. The Teleramic hoist has a rated capacity of 25 tons. **(53)**

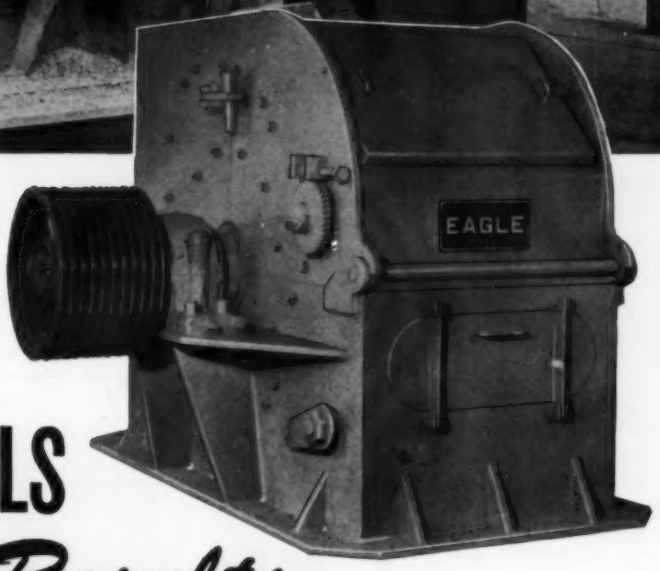


• Calumet Steel Castings Corporation has developed a new wheel block for earth-moving equipment with large wheels requiring tires up to 60 in. in diameter. Known as wheel block WB 16, it is designed for loads up to 50 tons or more. According to the manufacturer, in case of overload design of the supporting members allows the block to bend rather than break, and no tire rupturing projections are presented. **(54)**

• The Agipeller, a new suction dredge agitator manufactured by Pfarrer-Schmidt Engineering Company, Inc., features low-cost installation and minimum upkeep. This durable, double-duty digger and screen loosens compacted deposits and prevents clogging. Strong teeth cut and loosen compacted deposits and the oscillating cutter assembly shunts aside oversize, keeping the nozzle clear in most deposits. **(52)**

• The Ottawa Steel Division, L. A. Young Spring & Wire Corporation, has made available for the Michigan 75-A tractor-shovel the Ottawa Big Muscle backhoe. The patented automatic ejector bucket ejects wet or sticky materials without loss of cycle time. Another feature, the Ottawa One-Trol, assures fast, smooth operation by the use of only two levers to control all actions. Power is obtained from the Michigan hydraulic system. This heavy-duty, industrial-type backhoe provides good ground clearance for easy operation and maneuverability over rough terrain, and is available through Michigan Tractor-Shovel dealers. **(55)**

Amazing results have been obtained on this Eagle 36-42 installed in Wyandot-Dolomite Corporation's quarry, Carey, Ohio.



EAGLE HAMMERMILLS

Pay off in Results...

This newest hammermill-pulverizer is designed to do that larger, heavier job. Makes quick work of limestone or any stone up to 3", at the rate of 100 to 250 tons per hour.

The consistently high quality and cubical shape of EAGLE processed limestone is the talk of the "quarry-town". In many cases it eliminates the need for a primary crusher.

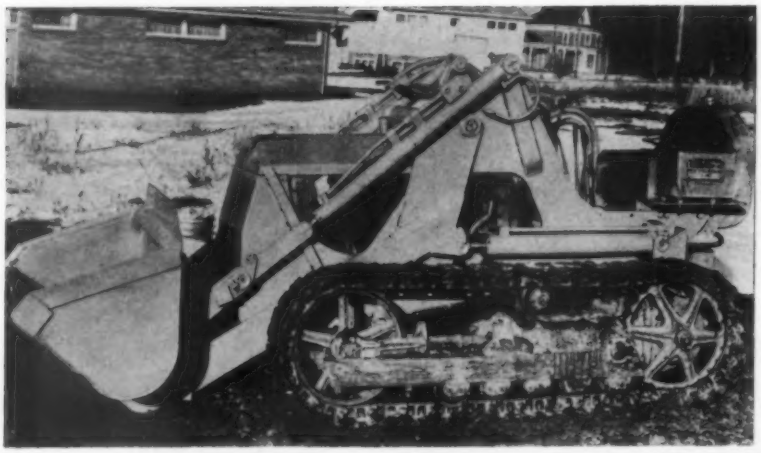
SKF spherical, roller type, self-aligning bearings are typical of the quality throughout. Adjustments easily made on grate bars and breaker plates while machine is in operation.

Send for complete specifications, Folder 1150.

EAGLE

JAW CRUSHERS • IMPACT BREAKERS
PULVERIZERS • CONVEYORS • LOADERS

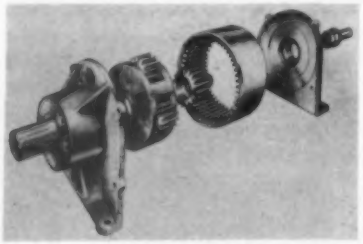
CRUSHER CO., *Inc.* GALION OHIO·U·S·A



• Featuring more power, speed, and durability, a new model TL-21 loader has been made available for Caterpillar D2 tractors by Teale & Company. The TL-21 will lift a heaped ⅞-cu. yd. bucket to full 9-ft. 10-in. height in about 6 seconds. A new, heavy-duty "Ram-Fill" bucket rolls back a full 40 degrees at ground level for faster, fuller loads. When the self-leveling bucket reaches full height, the dump and banging action help rid the bucket quickly of wet, sticky material. **(56)**

• A new remote-control hook-up is now available for the "Jetcreter," a machine developed by Engineered Equipment, Inc., and used extensively for the air-placement of refractory materials. When the hopper of the "Jetcreter" is filled, the remote control unit is set within easy reach of the nozzle man who operates the control for stopping and starting the gun. The unit eliminates the need of a guntender and reduces the cost of operation. **(59)**

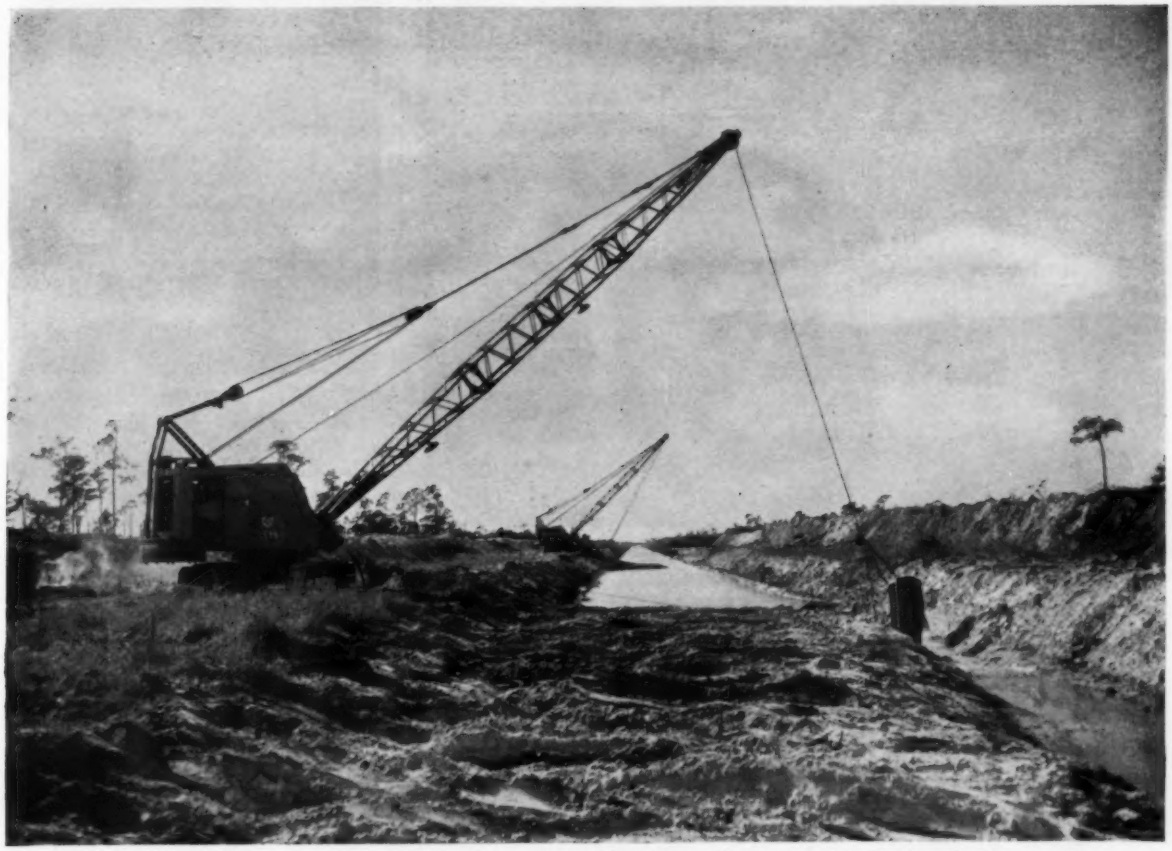
• Bagged material can be conveyed in any curve to a 5-ft. radius on a curved, powered conveying surface designed by the Power-Curve Company. Conveyors can be built to make an "S" or "U" turn and to supply a continuous conveying surface around almost any contour. Standard widths are 18 in., 24 in., and 32 in. Steel spring belts on 1¼-in. centers running over grooved rollers provide a versatile conveying medium. A flexible curve which delivers to the left or right and can be raised or lowered while running is also available. **(57)**



• By means of simplified design, the Crichton Company has developed a gear reducer with one basic model which covers the complete range of reduction ratios. Crichton gear reducers cover ratio ranges from 3 to 1 up to 250 to 1 simply by changing the combination of standard planetary assemblies available. **(58)**

• Increased power and load capacities, 3-speed automatic tranmissions with push-button controls, expansion of power steering and power brakes to all model types, and new styling are among the new features of the 1957 Dodge truck line. The new "K" series offers nine engines with 12 horse-power ratings ranging from 113 to 232 hp. The 900 six-wheeler (above) in the 1957 line is offered in wheelbases of 144, 156, 174, and 192 in. A 38,000-lb. capacity rear axle unit is available. The 354-cu. in. engine develops 232 hp. and 355 foot torque. **(60)**

It's time to compare... with LINK-BELT SPEEDER



As a dragline, shovel, hoe or crane a Link-Belt Speeder provides new opportunities to step up production schedules and profits. No other machine can touch it for fast, effortless control . . . easily responsive brute power . . . stamina and low maintenance.

New way to measure shovel-crane efficiency

Link-Belt Speeder completely revises existing production standards. It's the only line with true power-hydraulic controls, up to 40% more usable hp!

With competition getting rougher, can you afford to think in terms of outdated production standards? If you aren't using a Link-Belt Speeder —it's hard to realize just how much more production . . . more usable net horsepower these new shovels, cranes and hoes offer.

Speed-o-Matic power hydraulic controls—a Link-Belt Speeder exclusive—make every move fast, sure, easy. With them, you can boost output —often as much as 25% or more!

From track treads to boom tip

. . . every detail of a Link-Belt Speeder reflects advanced engineering, skilled craftsmanship, precision construction and quality materials.

Check this list of a few standard and optional features—independent swing and travel . . . independent rapid boomhoist . . . torque converter . . . third drum . . . reversing clutches for both hoist drums . . . and hydraulic-actuated swing brake.

It's good business to *compare now!* See why more and more Link-Belt Speeder owners have completely revised their thinking on how fast a job will go. Your distributor will be pleased to arrange for you to see a new Link-Belt Speeder in action, give you the facts. Call him now! Link-Belt Speeder Corporation, Cedar Rapids, Iowa.

14,360-A

LINK-BELT SPEEDER

Builders of a complete line of shovel-cranes . . . with exclusive Speed-o-Matic power hydraulic controls

Specially Engineered Equipment

This Yuba dredge, built for Charles T. Hover, general engineering contractor, Burlingame, Calif., has hull 7' x 40' x 140', is designed so its 6-yd. clamshell rig can easily be removed for land use. Like Yuba bucket ladder and hydraulic dredges, it's built to fit the job.

For moving Sand, Gravel, Rock, Earth
Built by YUBA

Yuba brings to your materials handling problems a half century of experience designing and building special machinery—hoists, conveyors, drives, digging, screening and sizing equipment, winches, pumps, hauling units, barges, etc.

We're equipped to design and build complete systems to fit your needs. For example, Yuba-built dredges for mining and aggregate handling usually include digging, processing, and conveying equipment—all in one plant.

We can build in our own plant machinery of almost any size. Facilities include: Engineering and designing, structural steel fabricating, heavy and light machining, welding, forging, heat treating, pattern making, export packing and shipping. Thus you have one source, one responsibility for your entire job from designing through supervision of field assembly, where required. You save the headaches of dealing with multiple suppliers.

Our plant is located on San Francisco Bay at Benicia, giving you a choice of shipping by water, rail or truck.

YUBA DREDGES — PROVED DEPENDABILITY AROUND THE WORLD

Price-wise we're competitive. Consult us NOW for help on specially-engineered equipment. Wire, write or telephone Exbrook 2-0274.

112

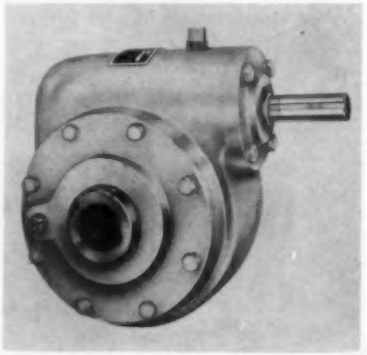
YUBA MANUFACTURING CO.

Room 651, 351 California St., San Francisco 4, California, U. S. A.

AGENTS { SIME, DARBY & CO., LTD. • SINGAPORE, KUALA LUMPUR, PENANG.
SHAW DARBY & CO., LTD., 14 & 19 LEADENHALL ST., LONDON, E. C. 3.

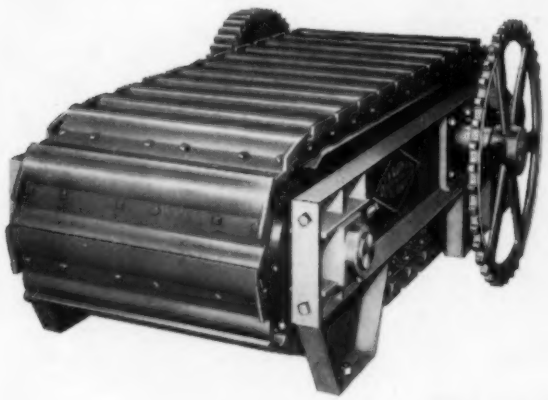
CABLES: YUBAMAN, SAN FRANCISCO SHAWDARBCO, LONDON

• To enable the faster, more efficient and economical handling of grease, the Tower Oil Company has introduced a new 1-lb., factory-packed grease cartridge. According to the manufacturer, the cartridge, teamed with a new type of gun, eliminates the work, waste, and mess of filling from a pail or drum, and prevents deterioration and contamination of grease by dirt, grit, and moisture. The cartridge, containing Tower Grezall, can be loaded into the gun in thirty seconds. The gun, delivering 10,000 lb. of pressure with only a light pumping motion required, drives grease into areas with such force that worn-out grease is pushed out. **(61)**



• A shaft mounted worm geareducer offered in four basic sizes has been introduced by Electra Motors, Inc. Case construction is of a heat-treated aluminum alloy which provides minimum weight and good heat exchange characteristics. Corrosion resistance and high tensile strength are provided by the use of aluminum. Radial shielded bearings are used on high speed shaft, and tapered roller bearings on low speed shaft. Worm-gears are made of a high grade gear bronze. Mechanical lip-type seals are mounted on shafts which are ground and honed for close finishes. **(62)**

DIAMOND FEEDERS—
a type and size for any job



APRON FEEDER

For all high capacity feeding—from under bins or surge piles to a belt conveyor, or into a primary crusher—the Diamond Apron Feeder is the popular choice. Operating in either an inclined or horizontal position, it provides an even, constant flow of material. It is particularly effective when moving large, heavy pieces.

Simplicity of design and rugged construction assure long trouble-free service. Extra heavy apron slats are mounted on sturdy chain tracks running smoothly on heavy duty rollers. Slats overlap to form a continuous bed, and corrugated surfaces prevent slippage.

Available in standard widths—24″, 30″, 36″, 42″ and 48″; and in a range of lengths to suit all needs.

PLATE FEEDER

For feeding lighter materials such as sand and gravel, the Diamond Plate Feeder is unmatched. At installations of portable and stationary crushing plants, and for feeding onto conveyors, these units provide correct flow of material to keep the operation running smoothly.

Properly balanced construction makes for durability; and the five-position adjustable stroke is a Diamond bonus.

Single or double eccentric types are available, all in 5-foot lengths. A choice of widths to suit the job: 16″—20″—24″—30″—36″—42″.

For descriptive catalog D-101—contact your Diamond distributor.

BUILD BETTER ROADS TODAY · FOR A GREATER AMERICA · See you at the ROAD SHOW CHICAGO Jan. 28-Feb. 2, 1957 · AMERICAN ROAD BUILDERS ASSOCIATION

DIAMOND

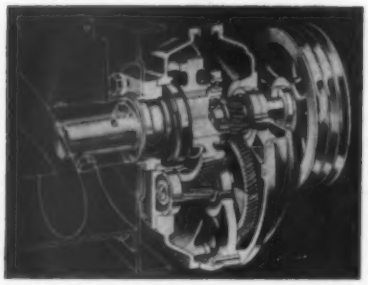
DIAMOND IRON WORKS

DIVISION

GOODMAN MANUFACTURING COMPANY

HALSTED STREET AND 48th PLACE • CHICAGO 9, ILLINOIS

EVERYTHING FOR THE AGGREGATE PRODUCER



• A new speed-reduction unit especially designed for screw conveyor applications has been introduced by the American Pulley Company. The American Screw-King drive is a compact unit with a flange adaptor that permits bolting directly to the trough end of the screw conveyor. With its companion V-belt drive, the Screw-King provides any screw conveyor speed beween 12 and 290 r.p.m., with adjustable speeds available. The unit may be used to drive inclined screw conveyors in which the angle of inclination or declination is up to 20 deg. above or below horizontal. The Screw-King is made in three sizes from ½ to 10 hp., and with three reduction ratios. **(63)**

X . . . chosen by Experienced Producers

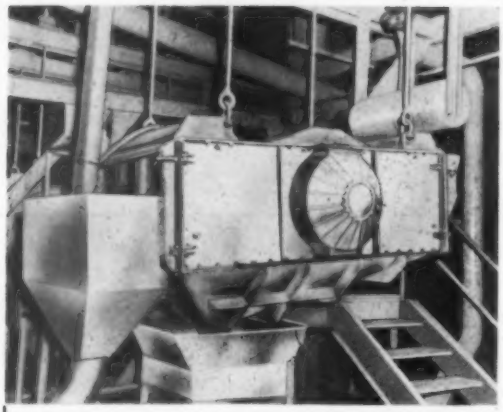
GYROSET VIBRATING SCREENS

for

SIZING

and

DEWATERING



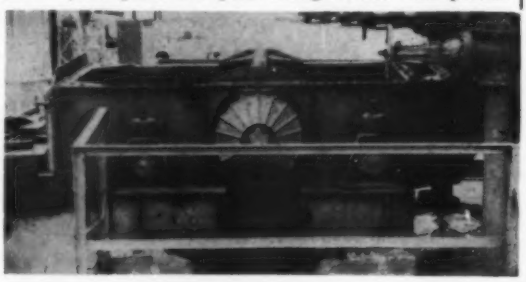
Suspended Gyroset 3'x6' scalping oyster lime slurry at ⅛" opening.

- ***Positive Eccentric Action***
- ***Positive Stroke Adjustment***
- ***Only 2 Bearings***

Modern operators standardize on GYROSET Screens for all scalping and raw material sizing jobs.

The eccentric action of these units insures maximum screening efficiency. They can operate at high speeds, and at any degree of slope. Stroke adjustable from 0 to ⅜".

Install GYROSET Screens in *your* plant for peak sizing service and profits.

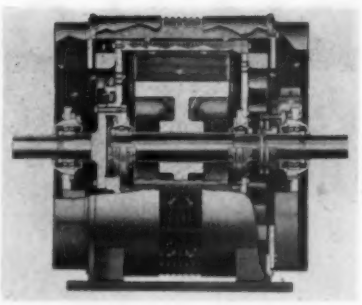


4' x 8' base mounted Gyroset removing foreign matter from 50% slurry — 4 mesh.

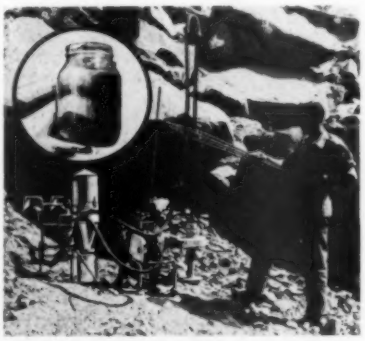
Write Today for Complete Details

PRODUCTIVE EQUIPMENT CORP.

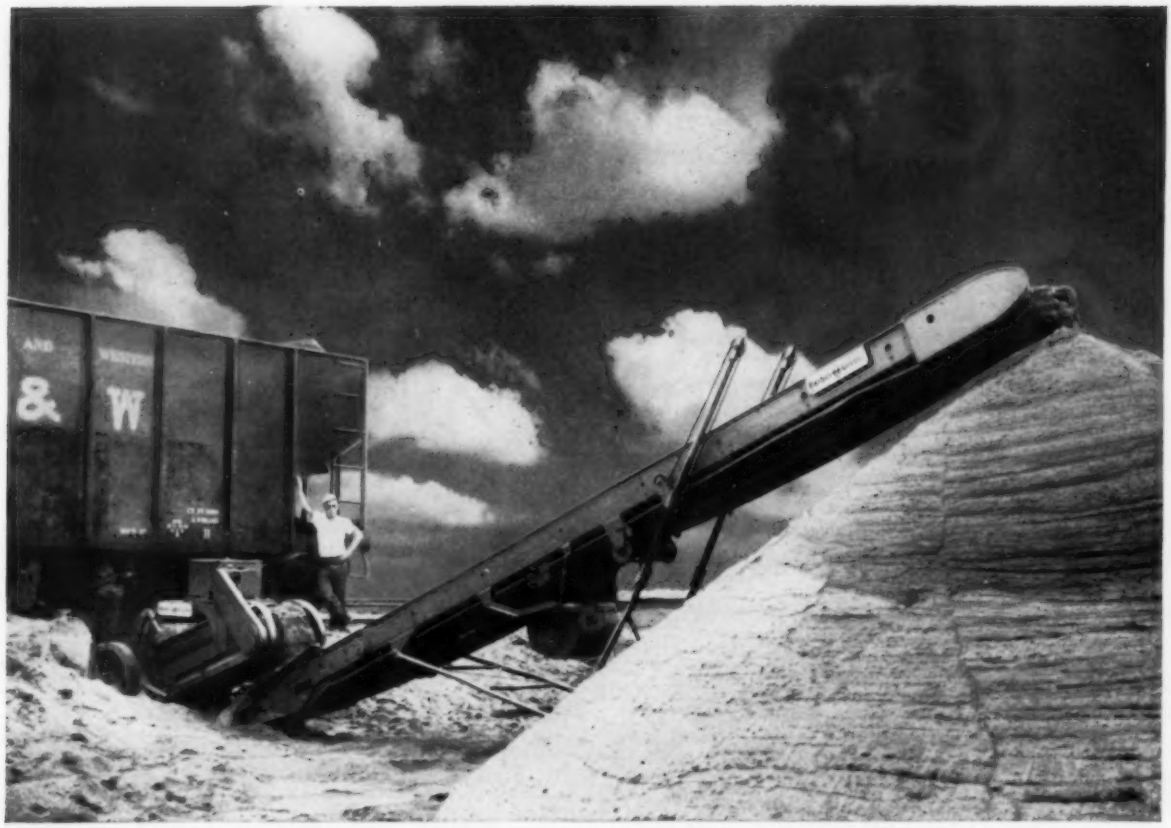
2924 W. LAKE ST. • CHICAGO 12, ILL.



• Type MDS, a new magnetic drive developed by the Electric Machinery Manufacturing Company, takes the place of two existing lines, the MDC and MDE types. A single basic design is now used for all sizes and ratings from 200 hp. at 720 r.p.m. to over 2,500 hp. at higher speeds. Major components of the magnetic drive are a ring member, turned by the driving motor, and a magnet member connected to the load. Speed of the magnet is controlled by varying the amount of d.c. excitation. The ring member is a simple eddy current ring, grooved for maximum heat dissipating capacity. **(64)**



• Known as the Mighty Midget, a 125-lb. portable rotary drilling system which removes all cutting from the hole by vacuum has been developed by the Houston Tool Company. High velocity air cools the bit and lifts the cutting internally through the drill stem. Cuttings are separated from the exhaust and are deposited in a transparent glass container in the order removed, furnishing visible core samples easily correlated to depth. The vacuum system, requiring no water, insures against loss of circulation in fissures or broken formations and eliminates the possibility of contaminating cores. The Mighty Midget drills a 1¾-in. hole up to 100 ft. deep in dry formation. Among its many applications are shot and blast hole operations, exploratory mining, and evaluation of underground deposits. **(65)**



Ohio contracting firm, S. E. Johnson Co., reports:

"We unload the largest hopper cars in 45 minutes"

"Our Barber-Greene unloader and conveyor easily handle 800 tons a day with just intermittent operation. So far, we have moved over 85,000 tons of material and have had no maintenance expense to speak of."

This statement isn't a manufacturer's specification; it is a factual, unvarnished, report typical of the many comments on outstanding performance of Barber-Greene car-unloading equipment.

Wherever it's used, the combination of the 363 Portable Conveyor and the 358 Car Unloader provides a sure way to cut unloading costs and to release cranes and other, more expensive equipment for more efficient operation on other jobs. Whatever these Barber-Greenes handle—coal, sand, gravel or other bulk materials—they do the job virtually automatically as a one-man operation.

Both conveyor and unloader are mounted on pneumatic tires for easy maneuvering about the yard . . . for fast between-job towing at truck speeds.

B-G Unloader operates above or below the rails. Portable conveyor can be equipped with screens, power hoist and other accessory equipment. Capacity ranges to 150 t.p.h. Powered by gas or electricity.

56-13-PO

Barber-Greene

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

HEAVY-DUTY GRINDING

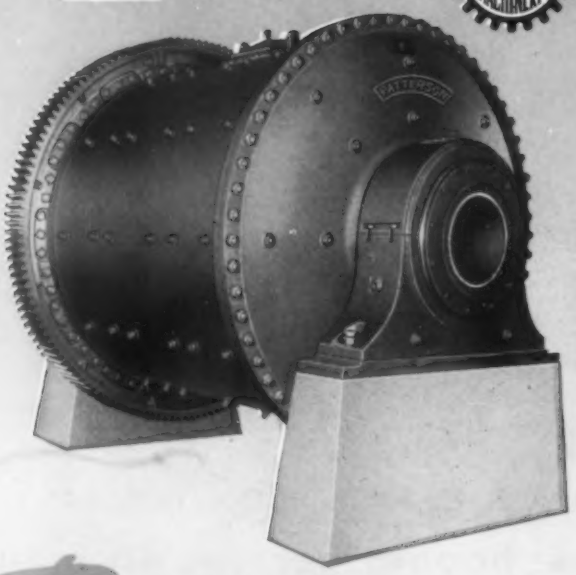
from

Alumina

to

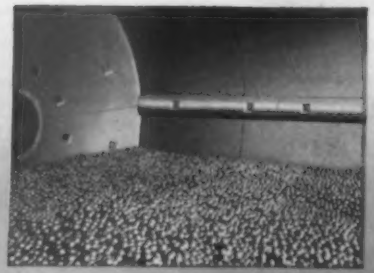
Zircon

SATISFACTION PATTERSON MACHINERY



Patterson

BALL & TUBE MILLS



BUILT TO WITHSTAND THE MOST SEVERE PUNISHMENT IN SERVICE—Readily adaptable to fine or coarse grinding, wet or dry grinding, open or closed circuit grinding. Used successfully by the metal mining industry throughout the world.

Do you have a copy of our Catalog 5347

The Patterson Foundry and Machine Company

A Subsidiary of Ferro Corporation

East Liverpool, Ohio, U. S. A.

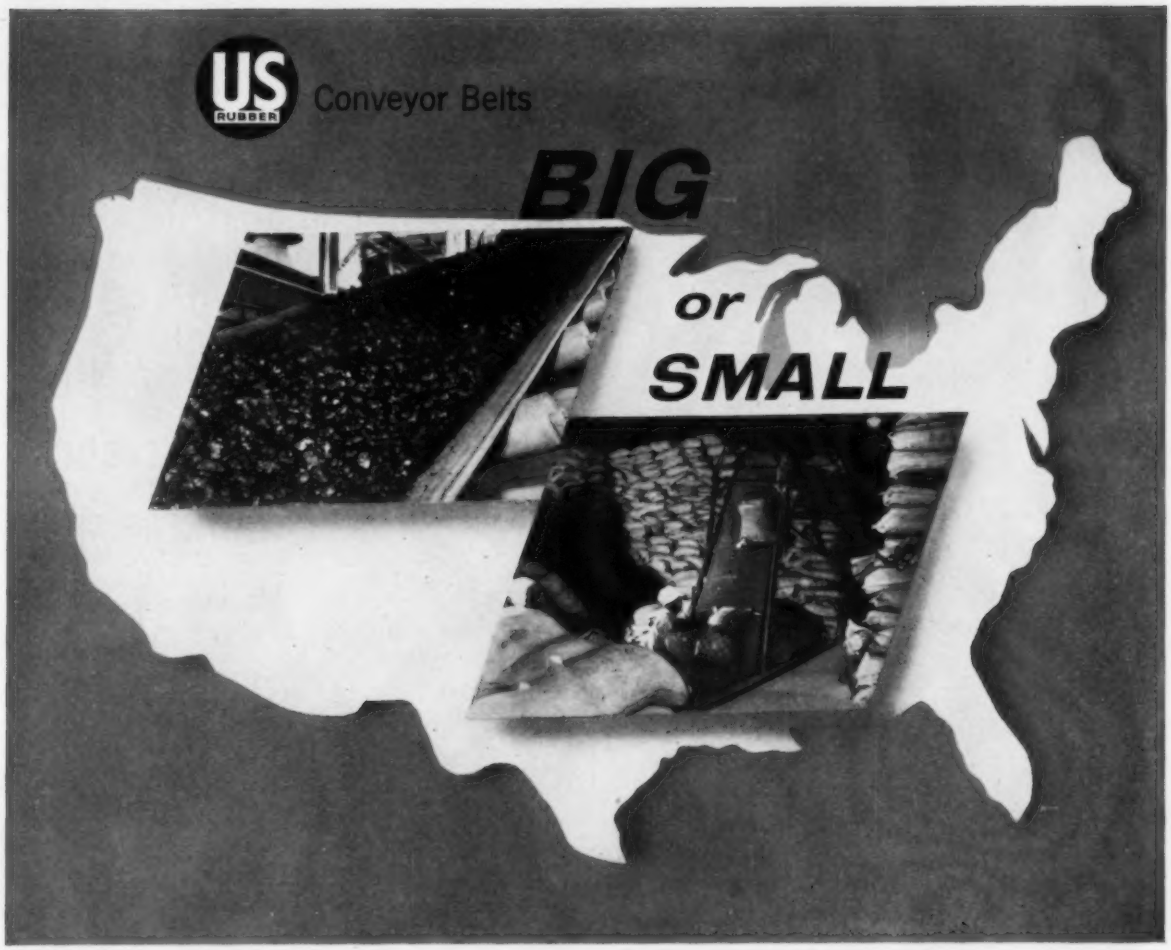
The Patterson Foundry and Machine Company, (Canada) Limited

Toronto, Canada

MONTREAL

• The G-800 Tracdril, a self-propelled, one-man operated, track-mounted wagon drill introduced by the Chicago Pneumatic Tool Company, mounts a heavy-duty 4-in. Drifter, and for soft-formation drilling can mount a CP-556 Rotauger. Two "Power Vane" reversible tramming motors enable the G-800 to tow its own air compressor. During actual drilling operations, the G-800 is uncoupled from the compressor, and within hose limits, moves easily from hole to hole. Each track is independently powered by one of the two 6 hp. motors. Additional features include a simple, positive track-lock that prevents the unit from moving during drilling operations, and ground-hugging standard Oliver tracks. **(66)**

• New portable hose ramps, manufactured by the Copperloy Corporation, make a smooth roadway over hose up to 4 in. in diameter. Each ramp is made of lightweight magnesium and is constructed to give rigid support of 10,000 lb. Pairs of ramps are held together by heavy neoprene belting which gives flexibility on rough terrain and allows sections to fold for storage. Easily stacked and carried, the ramps are especially valuable in mining operations where flexible lines are often thrown across work areas. **(67)**



make the nearest "U. S." Sales Office your port of call!

Whatever your conveyor belt needs may be—your convenient "U. S." District Sales Office is your supply point. Here's what it offers:

- The most complete line of belts available
- Fast delivery
- Expert splicing service
- Belt engineering and conveyor design help
- A no-obligation survey of your belting needs

The "U. S." belting engineer will show you the unique "U. S." conveyor belt kit which enables him to build, right before your eyes, a miniature sample of the right type and size of belt to fit your needs.

So whether you're involved with long hauls and heavy loads of ore, oats, or aggregate—or small distances and light weights, such as peas, packages or parts—contact any of the "U. S." offices listed below. Or write us at Rockefeller Center, New York 20, N. Y.

Atlanta, Ga.
999 Lee Street, S.W.

Baltimore 5, Md.
500 N. North Point Road

Boston 6, Mass.
560 Atlantic Avenue

Buffalo 3, N. Y.
133 East Swan Street

Charleston, W. Va.
706 Morris St. at Smith St.

Chicago 32, Ill.
4135 South Pulaski Rd.

Cincinnati 37, Ohio
4921 Para Drive

Cleveland 3, Ohio
7208 Euclid Avenue

Dallas 9, Texas
6125 Peeler Street

Denver, Colo.
4800 Colorado Blvd.

Detroit, Mich.
2121 West Fort Street

Houston 20, Texas
5711 Armour Drive

North Kansas City 16, Mo.
16th and Swift Avenues

Los Angeles 58, Calif.
Soto & E. 46th St.

Milwaukee, Wis.
1314 North Seventh St.

Minneapolis 1, Minn.
400 Second Avenue, N.

New Orleans 25, La.
900 S. Jefferson Davis Parkway

New York 13, N. Y.
191 Hudson Street

Odessa, Texas
912 North Grant Avenue

Oklahoma City 5, Okla.
425 E. Hill St.

Omaha 3, Neb.
4469 Farnam Street

Philadelphia 6, Pa.
5th and Locust Streets

Pittsburgh 12, Pa.
101 Sandusky Street

Portland 9, Ore.
630 N. W. 10th Avenue

St. Louis 2, Mo.
305 South Broadway

Salt Lake City 11, Utah
160 Social Hall Ave.

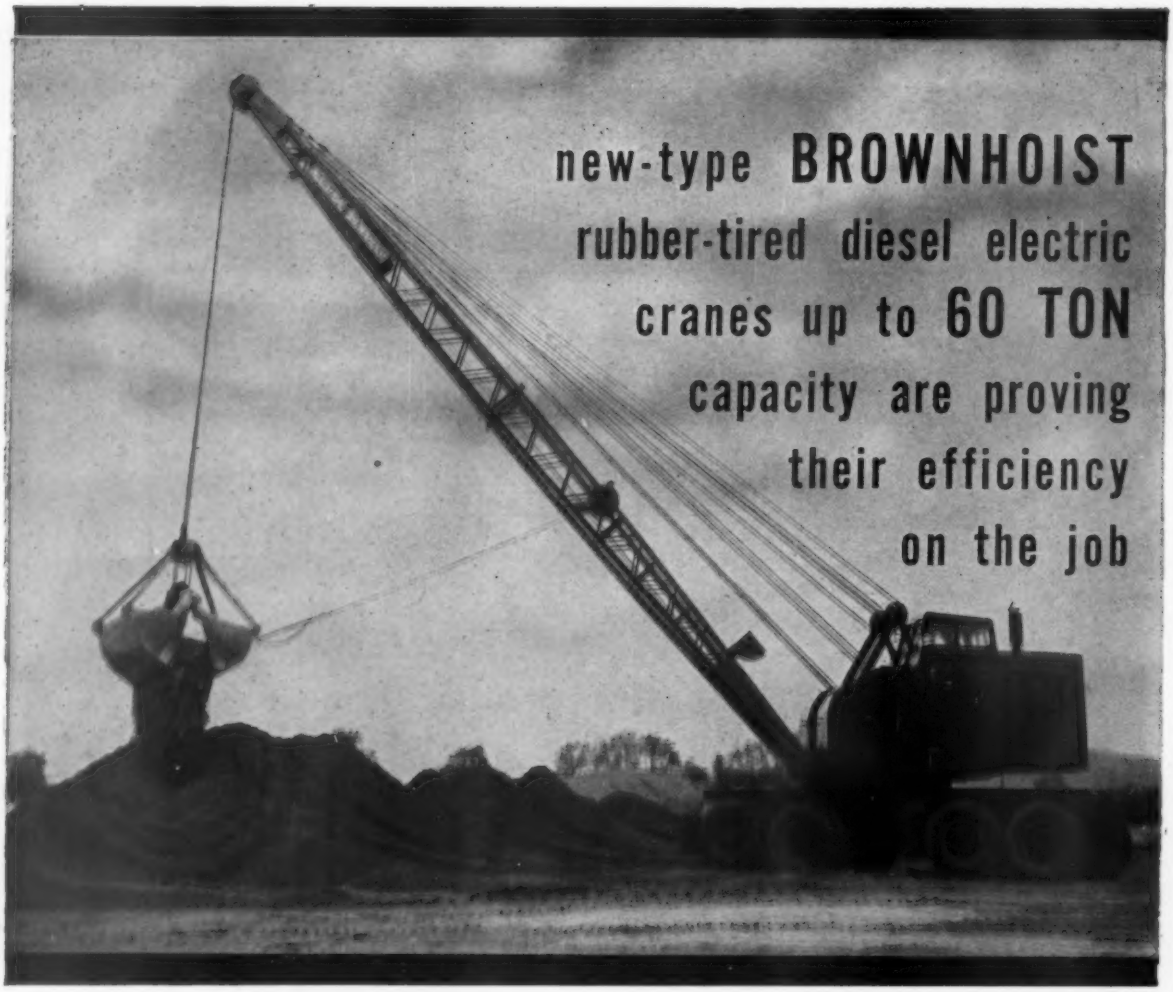
San Francisco 24, Calif.
6025 Third Street

Tulsa 4, Okla.
1132 South Lewis Avenue

US RUBBER

Mechanical Goods Division

United States Rubber



183

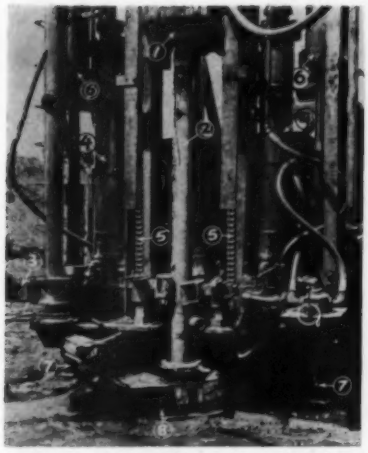
BROWNHOIST MATERIAL HANDLING EQUIPMENT GIVES A LIFT TO AMERICAN INDUSTRY

INDUSTRIAL BROWNHOIST CORPORATION
BAY CITY, MICHIGAN • DISTRICT OFFICES: New York, Philadelphia, Cleveland, Chicago, Denver, San Francisco, Montreal • AGENCIES: Detroit, Birmingham, Houston

The new Brownhoist Wagon-Cranes are specifically designed to do an outstanding job wherever high mobility and high capacity are required. You'll see them at work performing heavy duty jobs in mines, quarries, steel mills, for railroad and lumber operations and for many other large industries. Equipped with dynamatic clutch, anti-friction bearings at all essential points, power steering, electric travel and electric rotation. Mounted on a 12 wheel crane carrier capable of speeds up to 8 miles per hour, the unit can be operated by one man from easy-to-reach controls. Economical to operate. Available in capacities from 25 to 60 tons. For specification folder or further details, get in touch with our nearest representative or write us at Bay City.

SUBSIDIARY OF Penn-Texas

BROWNHOIST



A closeup of the Robbins rotary drill showing (1) sliding gear box; (2) drill steel; (3) revolving drill steel rack; (4) hydraulic cylinder; (5) chain hoists that provide down pressure; (6) hydraulic pistons; (7) jacks that level the unit for drilling; (8) dust deflector.

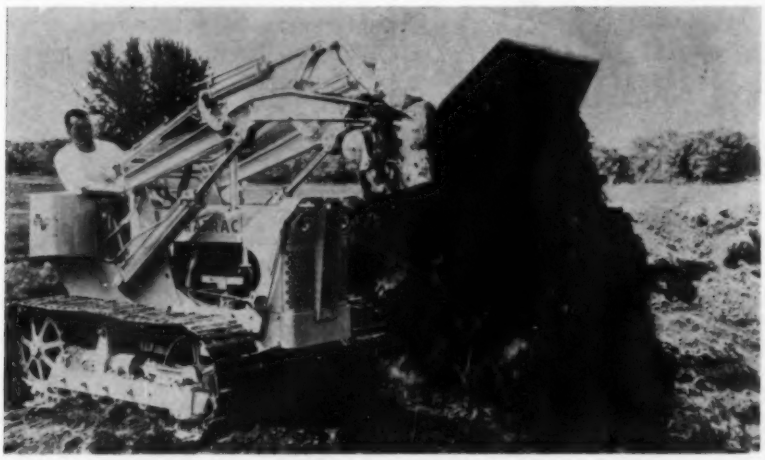
• A new dry-type, low-cost rotary drill has been invented by the Robbins Coal Company, Oneonta, Ala., to offset high drilling and blasting costs. This drill has proven so successful that a separate corporation, the Robbins Machine & Manufacturing Company, Inc., has been set up to manufacture and market the drill for tractor mounting.

The first Robbins drill was mounted on a Caterpillar D6 tractor. It drilled a 9-in. blast hole and provided a 15-ft. steel change. Later models of the drill, mounted on Caterpillar D8 tractors, drill a 9-in. blast hole with a 25-ft. steel change. Adapters are now provided for mounting the drill on non-Caterpillar crawler tractors.

The Robbins drill, which can handle bit sizes from 5 to 12 in., has drilled in soft shale up to 15 ft. per minute. In average hard sandrock, it has drilled 100 ft. or more per hour. In use at the Robbins Coal Company operation, the new rotary, drilling a 9-in. hole in hard blue sandstone, hard shale, and abrasive red shale, had an average drill speed of 68.6 f.p.m. A maximum drilling depth of 65 ft. can be attained.

Down pressure as high as 30 tons on the drill bit are obtained by two 8-in. hydraulic cylinders operating off a 70 g.p.m. hydraulic two-stage pump driven from power take-off on the tractor. A 600 c.f.m. compressor, which may be either a separate unit or mounted on the front of the tractor, forces air into the drill pipe to blow chips and dust away from the drill bit.

Total weight, without the tractor, is approximately 24 tons. **(68)**



• Several improvements designed to increase the digging and dumping ability of TerraTrac crawler tractor-loaders have been announced by the American Tractor Corporation. A mechanical "knockout" action is said to jar wet and sticky materials out of the bucket instantly at all dumping heights from 2 ft. up to full lift height. Another new feature which helps dislodge sticky materials is an increase in bucket dumping angle to a full 90 deg. At maximum lift height the dumping angle has been changed to 45 deg. Tilt arms on larger Terraloader models are now reversible in the field, making it possible to increase the dumping angle to 60 deg. at maximum lift height. The complete TerraTrac line includes eight gasoline and diesel-powered crawler models from 36.5 to 62 hp. Model "600" (above), largest model in the current line, offers the additional advantages of torque-converter drive, automatic shifting, power steering, and power brakes. **(69)**

Sand and gravel plants all over the country are discarding their sledge hammers and installing low cost Cleveland Vibrators on bins, chutes, and hoppers. Any granular from the coarsest crushed stone to the finest sand and powders responds to the firm action of vibration.

Cleveland Vibrators are low in original cost, inexpensive to operate, require little maintenance, and are quickly installed. The savings in wasted man hours quickly pays the cost of a Cleveland installation.

We will be happy to quote prices and specifications. Just write, giving detailed information and a sketch of your installation.

Air or Electric
Portable or Permanent
Silent or Standard

2710 Clinton Avenue • Cleveland 13, Ohio

Crane Wheels?

F85 F-C

Finest Name in Cast Steel!

FARRELL-CHEEK IS YOUR SOURCE!

FARRELL-CHEEK STEEL CO.

HIGHEST QUALITY ELECTRIC FURNACE CARBON AND ALLOY STEEL CASTINGS

FARRELL'S CARBON STEEL CASTINGS

F-C HARD EDGE STEEL CASTINGS

F85 STEEL CASTINGS

RAILROAD CASTINGS — Locomotive and Car R. R. Specialty Castings

ELEVATOR, CONVEYOR PARTS — Sprockets, Traction Wheels, Chains, Buckets, Rollers, Idlers, Bushings.

GEARS AND PINIONS — "True Tooth" Gears and Pinions, Sheaves and Wheels.

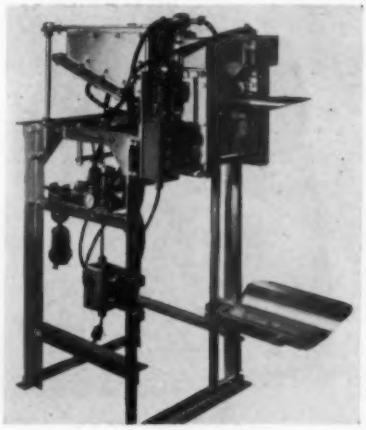
CRANE WHEELS — Overhead, Gantry, Monorail, Ingot Car, Charging Machine.

STOKER PARTS — Feed Screws, Furnace Tools, Flanged Pipe, etc.

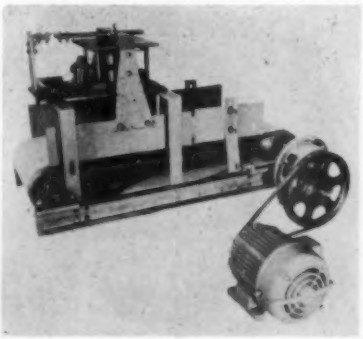
HEAVY HARDWARE — Complete Line Wire Rope Fittings and Cutters, Bar Benders and Cutters.

YOUR INQUIRY WILL PROMPTLY BRING DETAILED INFORMATION PERTAINING TO ANY OF THE ABOVE FARRELL-CHEEK PRODUCTS

SANDUSKY, OHIO



• The new Black Diamond Airflow valve bag packer, manufactured by the Black Products Company, uses the fluidizing principle of conveying material. This principle, in combination with a special weight control mechanism, results in an automatic controlled weight bag filling device which eliminates many problems of valve bag filling operations. Features include simplicity of design, accuracy, and noiseless, clean operation. Only 4 to 12 c.f.m. of air is required to activate the material and operate the packer. Airflow is capable of filling bags weighing from 10 to 125 lb. packer weight. **(70)**



• Principally designed by Weighing & Control Components, Inc., as a packaged unit with an integral belt conveyor and drive assembly, this conveyor belt scale utilizes the W-C pneumatic weight transducer and Uni-Force flexure platform for dependability and accuracy. Control functions available include indicating, recording, controlling, integrating, proportioning, and programming. Performance specifications feature 1 part in 2,000 repeatability and 1 part in 5,000 sensitivity. The unit is unaffected by side thrust forces. Springs, knife edges, and beams are eliminated. **(71)**

EATON FEATURES reduce hauling costs, keep trucks on the job

PLANETARY GEAR DESIGN—

distributes pressure and wear over four planetary gears, resulting in lower unit stress, reduced maintenance, longer axle life.

FORCED-FLOW LUBRICATING SYSTEM—

supplies positive lubrication to all moving axle parts, even at slowest vehicle speeds.

POSITIVE SHIFT CONTROL—

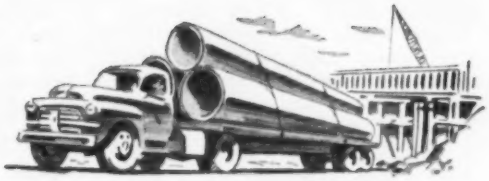
provides quick, easy shifts. Drivers use available gear ratios—the right ratio for road and load conditions.

SELF-CONTAINED AIR BRAKE—

provides for greater braking efficiency; quicker action, quicker release; quick, easy reline. Available on Eaton air brake models.

EXTRA-RUGGED CONSTRUCTION—

eliminates the possibility of harmful distortion or misalignment under full load, holds maintenance to a minimum.



More than Two Million Eaton Axles in Trucks Today!

Ask your truck dealer for complete information.

EATON 2-SPEED AXLES

EATON

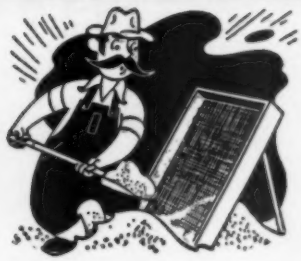
AXLE DIVISION

MANUFACTURING COMPANY

CLEVELAND, OHIO

PRODUCTS: Sodium Cooled, Poppet, and Free Valves* Tappets* Hydraulic Valve Lifters* Valve Seat Inserts* Jet Engine Parts* Rotor Pumps* Motor Truck Axles* Permanent Mold Gray Iron Castings* Heater Defroster Units* Snap Rings Springtites* Spring Washers* Cold Drawn Steel* Stampings* Leaf and Coil Springs* Dynamatic Drives, Brakes, Dynamometers

Screenings



by Ray L. Smith Jr.

WE ARE indebted to our board chairman, James E. Montgomery ("Monty" to most of the industry) for handing us the following, written by Charles A. Howe.

Consider the salesman, oh ye purchasing agents.

He wandereth many weary miles seeking orders and wearieth not.

He waiteth patiently in thy outer sactum and complaineth not.

He listeneth to thy troubles, thy golf and bowling scores and believeth all.

He taketh thy complaints, thy threats and thy rebuffs all with courtesy, patience and understanding.

He becometh as a buffer, smoothing out thy difficulties with his house, making urgent deliveries, pleasant collections and retaineth thy respect and friendship.

He explaineth thy needs to his house and preventeth many misunderstandings.

He giveth freely of his energy, humor and optimism.

He carrieth no chip on his shoulder nor wasteth thy time.

He speaketh well of thee, his house, his family, his rival and his country.

He studieth diligently that he may present new lines to thee and help solve thy problems.

He carrieth on bravely in depressions with small income, working harder and steadfastly retaining confidence in the future.

Verily he deserveth great credit, and that the full value of his work for goodwill in the world should be better understood.

More About Pigs

SIX months ago on this page we idly reported the use of whiskey, by the Danes, to make their pigs act optimistic, cheerful and happy.

Now, the news comes out of a 140 lb. problem pig, down Georgia way, who stays away from other pigs, "because she doesn't even know she is a pig." She is called Wee Wah.

Actually Wee Wah resembles her kind only in appearance. She is different, because, in the first place, she was raised by a mama cat in a litter of kittens.

Wee Wah missed being No. 13 by two. It was just as bad to be No. 11 in the litter when mother hog could nurse only ten. Someone went to the rescue, put piggy in the kitten litter, and Wee Wah grew and grew with the help of the old cat.

Wee Wah played in the yard with the kittens and eventually, ate out of the same pan with them. She became friendly with Spot, the dog, even chased cars and bicycles with him.

When she is called, the porker comes running like a dog. Wee Wah does not associate with other pigs, because, as we explained above, "she doesn't even know she is a pig."

Milkshake Concrete

THE concrete age recently moved forward a notch or two with the announcement of a new lightweight concrete, which is whipped up like a thick milkshake and which has unusual insulation properties. The material consists merely of sand, cement, water and a special "bubble forming" emulsion. It is said to be fire and fungus proof, moisture resistant and imprevious to temperature changes. A special machine whips up the mixture. Density is controlled by the amount of emulsion used.

We aren't yet sure just what qualifications one must have to operate the machine, but, it will obviously only be a matter of time until cement chemists and concrete technicians will be required to serve a stretch behind the soda fountain in their local drug store.

Potpourri and Succotash

"I want to exchange these snakeskin pumps," a woman in a crowded shoe store told the salesman. "They are imperfect—see those scratches?"

The clerk agreed and brought another pair out. "But those are imperfect, too," said the lady.

A few minutes later the man returned with eight pairs of shoes. The customer found a flaw in each pair. "They're all imperfect!" she finally said.

"Madam," the salesman said wearily, "I'm not perfect; you're not perfect. How can you expect a snake to be perfect?"

"Let's see," said the weatherman to his assistant, "You'd better put down rain as positive for this afternoon."

"But what makes you so certain?" asked the assistant.

"It's a cinch," the weatherman replied. "I've got a ticket for the ball game. I've lost my umbrella, my kids are going on a picnic and the wife is giving a lawn party."—

There are two things the Russians never seem to get—all they want and all they deserve.

Elmer, age 13, was puzzled over the girl problem and discussed it with his pal Joe.

"I've walked to school with her three times," he told Joe, "and carried her books. I bought her an ice cream soda twice. Now, do you think I ought to kiss her?"

"Naw, you don't need to," Joe decided, after a moment of deep thought, "You have done enough for that girl already."

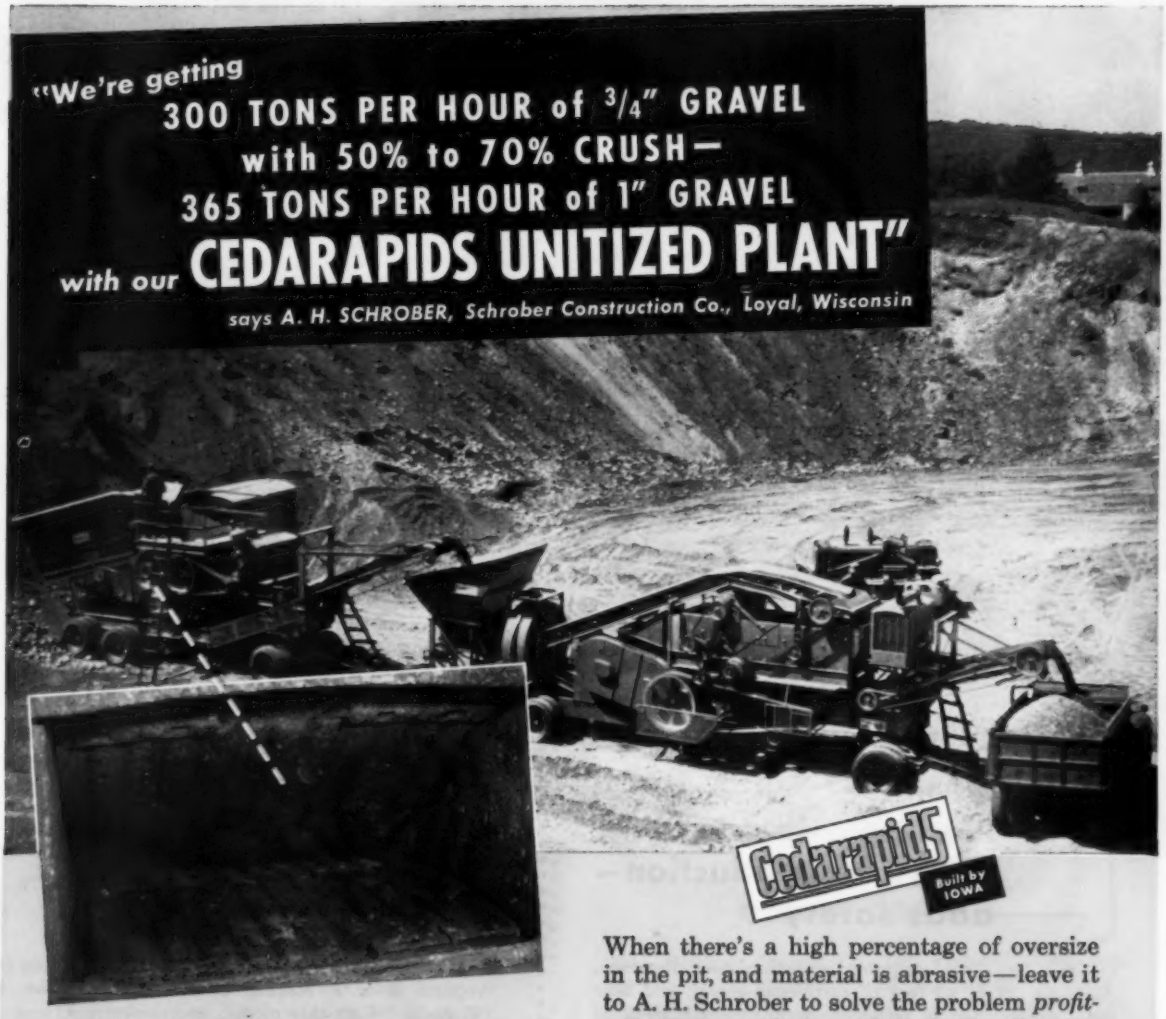
Doctor—"What you need, young lady, is a little sun and air."

Girl—"But doctor, I'm not even married."

One kangaroo mother to another kangaroo mother:

"Don't you hate these days when they can't play outside?"

"We're getting
300 TONS PER HOUR of 3/4" GRAVEL
with 50% to 70% CRUSH—
365 TONS PER HOUR of 1" GRAVEL
with our CEDARAPIDS UNITIZED PLANT"
says A. H. SCHROBER, Schrober Construction Co., Loyal, Wisconsin



900,000 TONS OF GRAVEL HAVE GONE THROUGH THIS CRUSHER

. . . and there's still plenty of life left in the jaws! It's no wonder A. H. (Tony) Schrober says "There's nothing like the jaw life of our Twin Jaw Primary. We turned the jaws at 525,000 tons and when this picture was taken, over 900,000 tons had gone through. The ribs still protruding indicate there's still a lot of service left in these jaws, and we expect to go over a million tons easily before replacement."

Production is another reason Tony Schrober is well pleased with his Cedarapids equipment. This Unitized Plant is turning out 300 tons per hour of 3/4" gravel, with 50% to 70% crush, and 365 tons per hour of 1" gravel. That's a good reason why he has taken delivery on another Cedarapids plant.

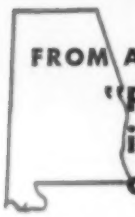
When there's a high percentage of oversize in the pit, and material is abrasive—leave it to A. H. Schrober to solve the problem *profitably.* He uses a Cedarapids Twin Jaw Primary Unit to handle the 50% to 70% crushing and get increased capacity . . . and to sharply reduce abrasive wear on the jaws. For secondary reduction and gradation he uses a Cedarapids 4024 Roll Crusher Secondary. It's the perfect combination for the performance Mr. Schrober likes . . . output of 2700 to 3300 tons per day in tough crushing conditions, steady operations day after day, and low maintenance costs.

Your Cedarapids distributor can help you choose the aggregate producing or bituminous mixing plant which will meet your requirements for capacity, specifications and low cost.

BUILD BETTER ROADS TODAY · FOR A GREATER AMERICA · See you at the ROAD SHOW CHICAGO Jan. 28-Feb. 2, 1957 AMERICAN ROAD BUILDERS ASSOCIATION

IOWA MANUFACTURING COMPANY
CEDAR RAPIDS, IOWA, U.S.A.

Here's ready-to-use stripping on International



FROM ALABAMA:

"Planet Power steering increases production—adds safety"

On this large coal-stripping operation near Peterson, Alabama, 20 to 40 feet of earth-sand-gravel, and blue shale overburden is removed—approximately 50% of it with crawler tractor power.

The International TD-24 moves an estimated 4,000 cu yd of earth-sand-gravel overburden per 10 hours, on the average 100-foot push.

"We are well pleased with our TD-24's," states A. S. Bowen, for Bowen Construction Company, Birmingham, with the authority of 7 years of TD-24 experience. "The TD-24 is the best cutting dozer we've ever used. The 2-speed (Planet Power) steering is a great advantage for rough terrain operation, which means increased production and added operator safety."

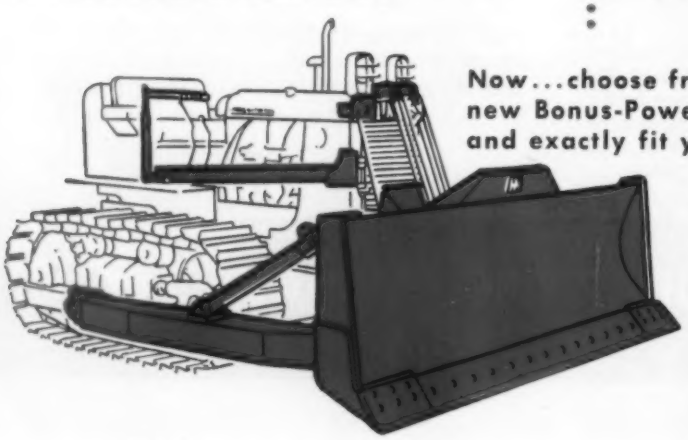
FROM WEST VIRGINIA:

"The TD-24 is built to take our hard work"

"We've owned seven International TD-24's since 1948," reports A & P Mining Company, Enterprise, West Virginia. "With this model, excessive track wear is a thing of the past. Our work is hard and the TD-24 is built to take it. We are well pleased because these machines are dependable, continuous producers."

One of the mining company's two TD-24's is shown operating under typical bituminous stripping conditions in the Jones Run area near Clarksburg.

Pushing cable tilt dozers, the crawlers are teamed with a 3-yard shovel to strip off an overburden of shale, limestone, and earth—averaging 70 feet. Operation is uncovering the 6 to 7-foot vein known as the Pittsburg seam, being mined for the electric utility market.



Now...choose from 42 new blades...to match your new Bonus-Powered International crawler and exactly fit your coal-stripping needs!

See for yourself how exclusive International TD-24 Planet Power steering eliminates the "load-limiting drag" of ordinary big crawler steering—gives you instant hi-lo power shift *under load*. Try such TD-24 job-speeding advantages as Cerametallic engine clutch operating ease and efficiency—and easy, on-the-go shifting. Measure how an International Drott 4-in-1 Skid-Shovel (1-yd. to 3-yd. capacity) can outproduce a machinery yard full of "one-purpose" machines. See your nearby International Construction Equipment Distributor for a demonstration!

experience from four states
TD-24 advantages

FROM KENTUCKY:

"Full-time live power on both TD-24 tracks ideal for highwalling"

"TD-24 Planet Power steering, giving full-time live power on both tracks, makes it an ideal highwall crawler. During our first 2,200 working hours on the TD-24 we had no downtime.

"Work capacity, operating ease, low upkeep, and dealer service are why we are using International crawlers," declares partner Maloy Mullins, of Mullins and Mullins Coal Co., Pikesville, Ky.

"Our TD-9 Drott Skid-Shovel loads out over 434 tons of coal in 7¼ hours—besides maintaining haul road and doing clean up. Takes only 15 minutes to change from bucket to angle blade."

Picture shows the Mullins' TD-24 stripping earth-shale overburden from the Elkhorn No. 2 seam.

FROM TENNESSEE:

"Still making a profit where others don't"

Sisco Brothers Mining Co., Mt. Pleasant, Tennessee, are uncovering phosphate rock deposits at a site once abandoned in 1931 because of high costs! Now they're making the venture pay, using International TD-24 capacity for large-scale overburden removal.

Says partner Earl Sisco: "We have been in the phosphate mining business for over 30 years and are making a profit reworking abandoned deposits where others find it hard to do. We have to move a tremendous yardage of overburden as cheaply as possible to 'come out' despite rising costs. First cost and dozing production of International TD-24's are most satisfactory."

The Siscos' TD-24's, working in parallel, average moving 16 cu. yd. per pass. The units operate the year round. This mining company loads out 500 tons of phosphate ore per 8-hour day!

INTERNATIONAL HARVESTER

INTERNATIONAL® Construction Equipment

International Harvester Company, 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Pipe-Boom Tractors . . . Self-Propelled Scrapers and Bottom-Dumps . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Trucks . . . Diesel and Carbureted Engines . . . Motor Trucks

excellent blend of technology, tours, and social activity enjoyed at

N.L.A. Operators' Meeting In Springfield, Mo.

By BUREN C. HEROD

Another ON THE SPOT Report

The three-day National Lime Association operating meeting held October 10 to 12 at the Kentwood Arms Hotel, Springfield, Mo., was—judging from the number of comments made in open session and in private—one of the most highly successful gatherings in the history of this industry group. An extremely well coordinated schedule contained a balanced program that combined technical operating discussions, papers on allied industrial problems in lime and other fields, and plant tours—as well as very pleasurable social activity.

The 113 operators and representatives registered were, as in the preceding separate operating session in 1954, provided with the opportunity of making a tour through two lime producing facilities—the Springfield and Galloway plants of the Ash Grove Lime & Portland Cement Company. The tour of these installations was made on the opening day of the meeting, and was followed on Thursday and Friday by the presentation and discussion of several technical papers.

Among the subjects covered were problems and development of cooler design and operation in conjunction with rotary kilns, a survey of recent developments and further possibilities in lime manufacture, features of small stone vertical kiln development, a survey of modern, high-speed drilling techniques, discussion of recent activity in lime research, and a description of the Priest vertical kiln at the Galloway plant of Ash Grove.

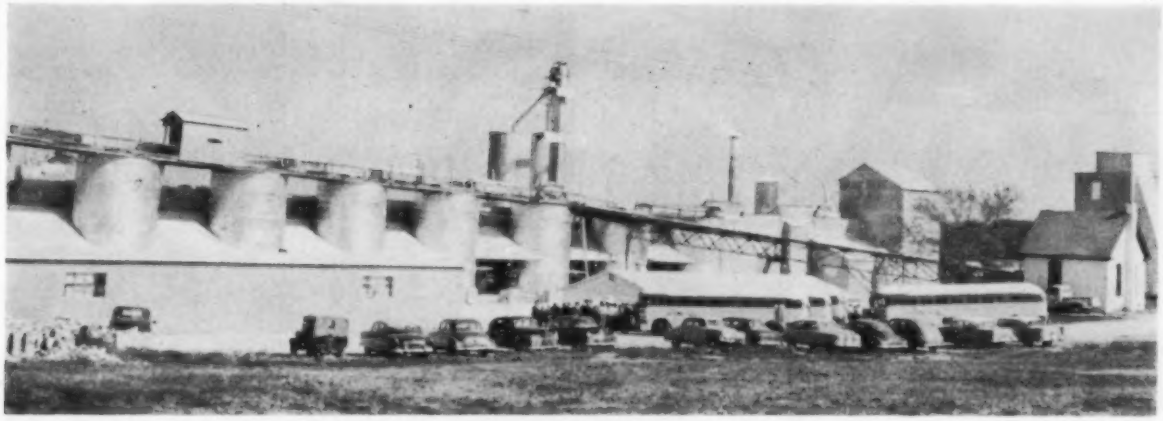
To acquaint the operators on matters beyond the realm of purely technical production problems, papers were also presented on a survey of the potential use of atomic energy as fuel in the light of dwindling reserves of other energy-providing materials, and on the responsibilities of management and operating personnel in individual plant safety programs.

In addition to the pertinent technical discussions, a most enjoyable schedule of social activities was provided. Starting with a luncheon, through the courtesy of the Ash Grove organization, which was held at the Galloway plant and preceded the tour of that facility, the visitors enjoyed cocktails, dinner, and entertainment at the Riverside Club on Wednesday evening; the next evening the annual banquet was held in the Crystal Room of the Kentwood Arms Hotel.

Papers for the second session were presented by W. G. Smith, Gypsum Lime and Alabastine, Canada, Ltd.; Fred Witmer, Ohio Lime Co.; Russell W. Hunt, Southwest Lime Co.; James A. Murray, M.I.T.; and Victor Azbe, Azbe Engineering Corp.

Speakers for the first operating session included, left to right: Clarence Stielstra, Dow Chemical Co.; Ian Smellie, Hall Engineering Co.; R. C. Allen, Allis-Chalmers Manufacturing Co.; and Lee Niems, Marblehead Lime Co.

For the ladies, other activities included a tour of scenic Ozark areas and two luncheon gatherings. Unanimous acclaim was accorded Paul Sunderland (chairman of the board, Ash Grove), chairman of the operating division, N.L.A., and C. E. Baxter Jr. (superintendent of Ash Grove's lime plants), chairman of the program committee, along with the other two members of the latter committee, Russell W. Hunt (presi-



A general view of the Springfield lime plant of Ash Grove Lime and Portland Cement Company, which was visited first on the plant tour.

dent, Southwest Lime Company), and Robert R. Ruetschi (general manager, Batesville White Lime Company), for their efforts in organizing both the operating and social programs. Mr. Baxter, Mr. Hunt, and Mr. Ruetschi also served as chairmen of the three technical sessions of the meeting.

Plant Tours The first plant visited was the Springfield operation where the visitors were shown the entire installation from the incoming stone-handling facilities through the draw floor for the nine vertical kilns, the hydrate section, and to the packing and loading operations. (The former quarry at this location is no longer operated and the stone used is shipped by rail from the Galloway site.) This plant has the amazing record of having operated—at the time of the tour—2,433 days without a lost-time accident.

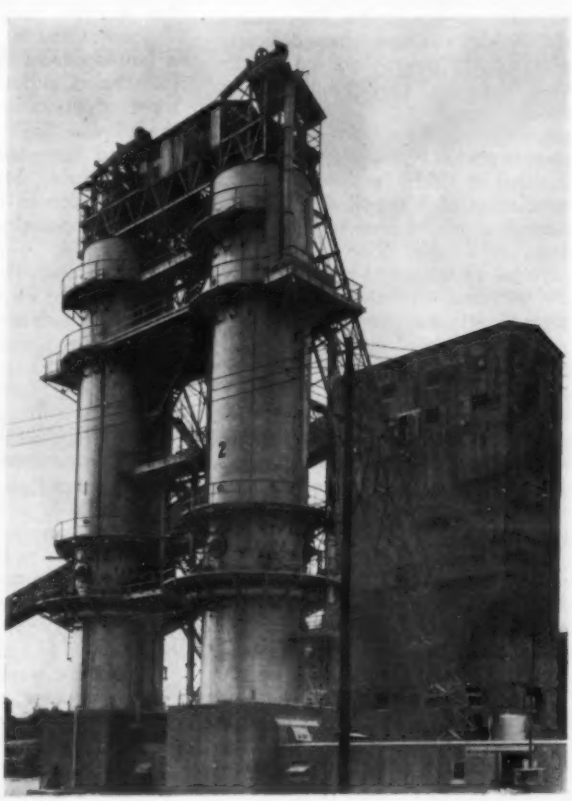
The party was then taken in buses to the Galloway plant, about six miles south of Springfield. Prior to luncheon, the group was provided with a demonstration of an Ingersoll-Rand Drillmaster "down the hole" drill. This unit was said to be the first of its type sold west of the Mississippi. Following this demonstration, the group was taken to a vantage point on the quarry rim some distance from the working face, from which they were able to witness a blasting operation. About 65,000 tons of stone were brought down in this shot.

Along with his welcoming remarks, at the luncheon, Mr. Sunderland commented on some of the features of the Priest vertical kilns in operation at the Galloway plant. Noting the international character of the efforts expended on this installation—the kilns were designed in England, engineered for this operation in Canada, and fabricated in Pennsylvania—Mr. Sunderland also referred to the semi-automatic charging, the water-cooled burners, and the provision of a standby fuel oil system.

Further comment was made in reference to the special hydrate plant which incorporates a hydrator and boiler developed by the Ash Grove organization along with the Midwest Research Institute in Kansas City. Following Mr. Sunderland's remarks the group was taken on a tour of the facility through every phase of the operation, from the primary crusher to loading, with the new kilns proving an interesting feature.

Coolers The first papers of the opening operating session, which was presided over by C. E. Baxter Jr., were presented by Lee Niems, Marblehead Lime Company, and Clarence Stielstra, Dow Chemical Company, on the subject of *The Development and Use of Rotary Kiln Coolers.* Noting that the Marblehead organization has built and operated contact coolers for several years, Mr. Niems stated that successful operation of these pot-type units depend on air flow.

The design of the coolers now in operation at Marblehead provide a center port that allows free passage of air through the central part of the cooler. In addition, it was learned subsequent to the original installation that by providing intermediate baffles and air ports between the central port and the side of the cooler, an improvement was obtained in the flow and draw of material from the



A feature of the Galloway plant tour was the investigation of these large vertical kilns, along with their feed, control, and discharge equipment.

Congressman Dewey Short, center, who addressed the gathering at the annual banquet, with Paul Sunderland, left, chairman of N.L.A.'s operating division, and C. E. Baxter Jr., chairman of the program committee.

Posing with their company's safety awards are, left: R. A. Sundholm, Dow Chemical Co., winner in Class C; and right, Gordon Lacy, U.S. Gypsum Co., Class A-1 winner. Ken Gutschick, center, stands behind the trophy awarded to Diamond Springs Lime Co., winner in the Class A-2 category.

cooler. The air flow is currently providing approximately 600 lb. of air per minute to every 300 lb. of lime produced. Lime discharged from the kiln into the cooler at a temperature of approximately 2,100 deg. F. is cooled to the point where lime discharged from the latter can be held in the hand. The size of this material is ¾ by 1½ in.

In his discussion on the use of rotary kiln coolers at the Dow plant, Mr. Stielstra noted that difficulty with rotary coolers had led to the study of contact cooling units. After study of a number of different types and designs, the company decided on a single-pocket type cooler which was installed in 1952. In the Dow plant installation, air is supplied to the unit through a pair of concentric annular rings, or bustles. The outer bustle provides air to central ports that supply the center of the cooler. The inner bustle supplies air to ports around the side of the cooler providing an air flow along the sides of the unit. In this installation the lowering of air temperature is comparable to that of the Marblehead cooler. Calcined material discharged from the kiln at a temperature of approximately 2100 deg. F. is reduced to approximately 131 to 136 deg. F.

In both the Dow and Marblehead cooler installations the air pressure drop through the units is approximately 10 in. Cooler efficiency of about 98 percent has been achieved, efficiency being calculated on the basis of heat removed from the lime over the temperature of the entering lime. In a question-and-answer period following these two papers a number of points were raised.

In answer to a query concerning the amount of moisture picked up by the calcined material in the cooler, Mr. Niems replied that in their case, due to the degree of burning, there is very little pick-up of moisture. In answer to a question concerning the head-room required for a 250-ton-per-day cooler, Mr. Niems stated that the pot-type unit as installed at Marblehead is 16 ft. from the top of the cooler to the bottom of the cooler pit.

Priest Kilns

The discussion on construction and operation of the 100-ton Priest vertical lime kilns installed at the Galloway plant was prepared and presented by Ian Smellie, Hall Engineering Co., Toronto, Canada. Mr. Smellie played a large part in the original design, installation, and subsequent establishment of operational procedures on these units. Since the N.L.A. operators had inspected the kilns on the preceding day, Mr. Smellie confined his discussion to the basic construction and operational features of the kilns.

Noting that the kilns were built as twin units, the speaker stated that each has a nominal capacity of 100 tons of lime per day and is designed to burn either natural gas or light oil. In addition, each unit is provided with its own independent storage bin and charging system. While the original plan of operation called for a separation of feed to each kiln so that stone of a 4- to 6-in. size would be fed to one unit and 7- to 9-in. size to the other, it was found in subsequent operation that there was little to be gained, and today both kilns are taking a mixed feed of 4- to 10-in. material.

The basic dimensions of the kilns were described as follows: each is perfectly round with a diameter inside the brick work of 14 ft. 3 in. Active height from the bottom of the cooling zone to the top of the preheat zone is roughly 62 ft. Overall height of the units from the ground is 128 ft.

Charging operations, it was said, are done only on two shifts daily—from 6 a.m. to 2 p.m. and 2 p.m. to 6 p.m. To charge each kiln, the charging operator draws stone from the respective bunker; the material is then passed over a 4-in. screen to remove fine material from the feed prior to filling the 3-ton charging skips. When it is full, a skip is hauled by cable up an incline to the top of the respective kiln, where it tips its load into a hopper.

Following an interval of a few seconds to make sure that the car is properly discharged, an automatically controlled bell below the hopper is lowered to allow the stone to discharge into the kiln. The bell is subsequently automatically returned to the closed position.

Lime discharge and drawing equipment below each kiln consists of a pair of air-operated shear gates which in turn discharge into a hopper of constant volume. When full, this hopper holds approximately 4 tons of lime, which continues a normal draw for each unit. Mr. Smellie pointed out that control of the air cylinder for the shear gates is manual since it is considered desirable to have the kiln operator at this location at the time of draw. A plate feeder below each four-ton hopper discharges the lime at a predetermined rate to a constant-speed belt on which it is conveyed to the lime grading tables and crushers.

In describing the brick work, the speaker noted that this lining varies in thickness from 9 in. in the upper

Quaker

Rugged, non-twisting airhose for your toughest drilling and digging problems

Your fastest supply source is your industrial supply distributor. Save time by purchasing Quaker-Quaker Pioneer products through him. You'll find him prompt and efficient in meeting your regular needs—and mighty helpful when emergencies occur. Write for free brochure and name of your distributor.

No matter what the job: boring into rock, breaking through shale, biting into concrete . . . no matter what the weather: wet, frigid or torrid . . . this tough air hose gives the utmost in stamina, dependability and easy handling.

Size for size this hose is stronger than other hose of equal capacity. Though light weight for easy handling, it will not snake or twist under pressure. Stands up to dragging over jagged surfaces, resists oil damage and withstands cracking at temperatures as low as −40°. Tube is non-porous and oil-resistant. On almost any hose installation you count on excellent performance with this hose—part of a proven line of rubber products, including belting, packing, and moulded rubber for every use.

H. K. PORTER COMPANY, INC.

HKP

QUAKER RUBBER DIVISION
Philadelphia 24, Pa.

QUAKER PIONEER RUBBER DIVISION
Pittsburg, Calif.

storage zone to 18 in. in the burning zone. In addition, each kiln was stated to have an additional layer of 1½ in. of fiberglass insulation between the brick and the shell. With the exception of inspection ports and points where brick work is interrupted by burners, the brick system was described as in all cases circular and continuous, a fact which is considered to be a contributing factor in the very low maintenance history of these units. The water-cooled tuyere type burners, of which there are six on each kiln, are arranged radially in an even pattern around the shell. These burners are supported entirely from the outer steel shell and cantilevered through the brick work and into the kiln. With two types of inner-nozzles for the burners, either of which may be inserted through the back of the burner elbow, either natural gas or a light oil alternate fuel may be utilized for burning.

The light oil fuel system consists of a remote main storage plus a 3,300-gal. tank located at the kilns. The light oil is diesel fuel which is used because the main storage had already been installed for diesels in the power house, and it was considered undesirable to have two kinds of oil in the plant, both for standby.

The control panel for each kiln is equipped with an identical and complete set of instruments consisting of the following: an indicating and controlling instrument for kiln pressure; an indicating, recording, and integrating flow meter for gas flow; an indicating, recording, and integrating flow meter for oil; an indicating flow meter for primary air; a similar flow meter for secondary air; and a temperature recording instrument indicating temperature for exhaust gases. It was pointed out that all instruments excepting temperature and fuel flow repeat on the burner level of the kilns for operating convenience.

It was noted that each kiln has 12 ports, six in the bottom of the burning zone and six at the top of the zone. These provide for visual inspection along with use of a portable pyrometer. In routine operation the usual time for visual inspection of the kilns, it was stated, is 15 minutes before a draw and 15 minutes subsequently. Since the usual draw time is at approximately hourly intervals, this means that the operator tours each unit at least once every half hour. In order to help the kiln foreman, sampling machines are continuously withdrawing samples of the product. These are sent to the laboratory where a report is issued on the condition of the material.

One other test which was considered of possible interest to the operators was described. It was stated that each night a rod is driven through to the center of the kiln at the upper inspection level. When this rod is withdrawn, various colors from white through to dark red, and the distances over which they occur, are noted and recorded. Over a period of time, Mr. Smellie said, it is possible to have at least some idea of what is happening in that part of the kiln which instruments cannot reach.

Power R. C. Allen, director of mechanical engineering, Allis-Chalmers Manufacturing Company, opened the discussion on his paper, *Power For Tomorrow,* with a question which is in many minds, namely, why are we developing nuclear power plants that have higher costs than present plants of the same kilowatt capacity? To answer this question, Mr. Allen made a statistical review of the available power-providing fuel sources in the United States and the rest of the world. This review was further amplified by a discussion and charts showing energy used and projection of future consumption in the light of irreplaceable fuel now being consumed.

It was noted that our greatest source of power—coal—is being constantly depleted. Current estimates indicate that 75 percent of fuel consumed by 1975 will be in liquid form. In the United States, it is considered that the life of reserves of economically-recoverable fuel, recoverable at about 50 percent higher cost than at present, is in the neighborhood of 50 years; with respect to the entire world, this estimate ranges between 50 and 75 years. These estimated figures are based on the rate of present fuel consumption projected in view of reserves now known.

Mr. Allen then reviewed several current projects and possible future lines of endeavor directed toward establishing power sources to meet not only the current demand but the anticipated great growth of energy requirements. Among these, of course, are the several atomic power plants now under construction in the United States and other parts of the world. Mr. Allen noted that nuclear fission with nuclear fuels now available can provide 20 times the power of the present fuels.

The various types of reactors being installed for power plant application include the boiler, pressurized, liquid metal coolant and gas coolant types. It was noted that other types of power being investigated by scientists include solar, wind, tidal, and fuel-cell generation. With respect to the latter, it has been established in pilot cells that a 75 percent efficiency is attainable, as compared with a 40 percent efficiency in present steam plants. Other potential sources of power include volcanic heat, which has been tried in Italy, and radioactive wastes.

Mr. Allen concluded by stating that depletion of fuel reserves in the constant growth in per capita consumption of power makes the development of nuclear power plants, despite the present high cost, a mandatory effort.

Recent Developments Opening the second session with a discussion on *Recent Developments and Future Possibilities in Lime Manufacture,* Victor J. Azbe, Azbe Corporation, St. Louis, Mo., initially traced a picture of the history of lime kilns. This history drew a comparison between the operation and features of the average kiln in 1923 and in 1953. Mr. Azbe stated that the average daily output in the earlier year was 10 tons, while in 1953 that the figure had reached 93.9 tons. The natural draft formerly provided has been largely supplemented by air pressures in the neighborhood of 9-in. water gauge, although, according to Mr. Azbe's figures, the height of kilns had not radically changed over the 30-year period—being about 43 ft. in 1923 and approximately 46 ft. in 1953. The daily output of lime in pounds per square foot of shaft area has increased from 382 to 3,104. In addition to the change from natural to forced draft, installation of burners has generally been changed from side to center.

It was further noted that the character of gas producers and clinker beds (which have become thinner) has improved. Several charts were presented in showing a review of stone size *vs.* heat transfer, calcining periods in relationship to the size of stone and the degree of burning, relationship of draft to kiln capacity, and velocities of air and gas in the kilns. With the charts showing figures based on several years of study, they were drawn up to show the gain realized in current vertical kiln capacities.

In commenting on new developments which will largely aid in the automatic operation of vertical kilns, Mr. Azbe enumerated such points as measured gas flow, the addition of excess gas above the calcining zone, lower fan-power requirements, and

provision of more draft. It was noted that in design of new kilns, provision has been made for calcination of either small or large stone. In addition all air, measured, enters through the cooler. Gases are removed at separate points for large or small stone. Another new development, it was stated, is that of the double-center burner which goes along with the increased draft in use today.

Research In prefacing his remarks on current lime research developments, Professor James A. Murray, M.I.T., noted that the same amount of building lime is made today as 30 years ago. He stated that the output has actually not kept up with construction. Further, he said, there is a growing trend for the use and application of sheet materials and away from the use of masonry.

Lime has been able to hold its own with cement so far. In addition, chemical use is growing in some areas such as in water treatment, for example, but has gone down in others. He noted that the future for lime appears more favorable in the chemical field.

Among the research activities commented on were the following: tests on calcination of material following the rapid preheating of the stone; shrinkage in quicklime; and calcining of controlled size cubes of different types of limestone for determination of variations due to impurities. It was stated that tests have also been run with an activator, a type of whipping machine developed in Norway in which various mortar mixes ranging from 1:1:5 to 1:1:12 were analyzed. Mortar produced in the activator had a high plasticity and workability; and in respect to the problem of porosity on the additions of sand, it was established that a 1:1:12 mix proved to be only slightly more porous than the 1:1:5. A question presented by these investigations, said Mr. Murray, is: why did agitation raise plasticity and workability of the lime? This query, he said, is an area for further study.

In another area of research, it was pointed out, there have been efforts to determine whether or not magnesia in dolomitic-type hydrates will actually expand sufficiently to cause plaster failure. It was stated that there may be some dolomites which can be used only with care.

Small Stone Kilns A discussion of *Small Stone Vertical Kiln Development* was presented by W. G. Smith, production manager, Gypsum Lime and Alabastine Canada Ltd., Toronto, Ont., based on the installation and operating record of such units at his firm's Beachville, Ont., operation. Mr. Smith prefaced his description of the present plant with background information on kilns installed since 1939.

Between 1939 and 1950 four Azbe type kilns were built, two operated with natural gas and two with automatic gas-producing systems. In these four kilns the company burned a 3½- to 6-in. size of stone. With kiln feed restricted to plus 3½-in. material a problem was presented in the manner of disposal of 2- to 4-in. and smaller sizes. The engineering department of Gypsum Lime and Alabastine therefore took under active consideration the development of a vertical kiln to handle small stone.

While the use of 2- to 4-in. stone was originally contemplated, in adapting quarry production to other market demands it was found that production facilities came up with a surplus of 1¾- to 3½-in. stone. The design of the original small stone kiln was then modified to obtain the right draft conditions for burning this size.

Mr. Smith noted that the thinking of his company's officials on the subject of burning small stone in a vertical kiln has not stopped at the 1¾- to 3½-in. size, as plans are now being drawn up for a vertical kiln to handle the 1 to 1¾-in. size stone. He indicated that the cross-sectional area of the kiln for the latter might be approximately 46 sq. ft. Further, the off-take duct at the induced draft fan would have to be lowered to overcome the high draft resistance that would naturally be found in a vertical kiln burning 1- to 1¾-in. material. It was also said that less preheating would be required. An increase to the cubic volume of the cooler is contemplated, as well as provision for a continuous draw.

In describing the redesigned vertical induced-draft small stone kiln now in operation at Beachville, Mr. Smith stated that the unit has a vertical dimension of approximately 62 ft., and is elliptical in shape, sides and ends having a radius of 14 ft. 2 in. and 14 ft., respectively. The cross-section of the kiln shaft above the internal flues is 90 sq. ft.

The kiln is equipped with two internal flues, each having two ducts. On the sides of the flues adjacent to the sidewalls of the kilns, 13 gas outlet ports are provided, as well as 9 air ports. On both sides of the flues towards the center of the kiln shaft, six gas ports and ten air ports are provided.

The depth of the cooler is 13 ft. 3½ in., and the cooler is divided into six sections by a center wall built at right-angles to the two internal flues. Below each cooler section Syntron vibrators are mounted, allowing the kiln to be operated on a periodic draw or continuous draw.

Noting that in this type of kiln it is necessary for the operator to act quickly to prevent channeling, Mr. Smith stated that he believed that burning a small-size stone, this type of kiln is inclined to develop channeling, and for that reason has to be under constant surveillance. However, he said, frequent draw intervals make it easier to spot such conditions before they become serious.

As a result of the fact that the gas producer for the vertical small stone kiln under discussion also furnishes gas to a neighboring vertical kiln handling larger stone, an opportunity to observe the small stone kiln as a single unit was not realized until recently. For a six-day period during the summer, Mr. Smith said, it was possible to obtain operating results of interest to this discussion.

The following data was obtained: Producer gas temperature, 1,480- to 1,490-deg. F.; producer gas analysis, 27.2 percent CO; exhaust gas temperature, 500- to 680-deg. F.; lime tonnage produced per 24 hours, 174.6; coal tonnage used over the same period, 23.8 tons; fuel ratio 7.35; and available lime, 91 to 95 percent maximum.

Drilling The report on a *Survey of Modern, High Speed Drilling Techniques*, by Fred D. Witmer, Ohio Lime Company, Woodville, Ohio, emphasized the point that since drilling is one of the first steps in all lime processing, any reduction achieved in drilling cost will be reflected by a proportionate saving in the cost of the finished lime product.

In gathering data for this report, Mr. Witmer visited a number of quarry operations in Ohio. A comparison was drawn between rotary and well drills on the basis of footage of hole per bit, footage per hour, and, where available, costs of drilling per foot of hole.

It appears that the use of well drills is waning, Mr. Witmer reported, and all users of rotaries are particularly satisfied with the trueness of holes they produce, which facilitates loading of dynamite and usually produces better fragmentation. It was noted that while the former type of drills represent a much lower investment, it is much

(*Continued on page* 89)

heavy-media separation, pelletizing, diatomite, gilsonite, perlite, oil shale, phosphate discussed in

Nonmetals Sessions Of Mining Congress In Los Angeles

By HARRY F. UTLEY

Another ON THE SPOT Report

LOS ANGELES was the mining capital of the world during the first week of October, 1956, when the American Mining Congress staged its annual convention and show within the spacious confines of the Shrine Auditorium and Exposition Hall. Close to 6,000 operators and those with allied interests registered for the event.

Economic problems, legislative problems, operating problems — the 4-day program covered them all, whether those interests were in metal mining or in the booming industrial minerals field.

Program papers vied with the equipment exposition for attention, and there were 175 separate exhibits on three separate floors, plus an out-of-doors display of the heavier and bulkier machinery.

The S.R.O. sign for the two planned entertainment events was up early. The annual Miners' Jamboree this year was in the form of a dinner-dance in Hollywood's glamorous Palladium, while the 1956 version of the annual A.M.C. banquet featured songs by Marguerite Piazza, Metropolitan Opera soprano, the dining and dancing taking place in the Los Angeles Ambassador's Embassy Room and its world-famous Cocoanut Grove.

For the ladies, and there were hundreds of them registered, luncheons, a fashion show, and sightseeing tours kept them on a busy schedule.

After the four-day program was concluded, many of the visitors embarked on field trips to see at first hand the industry in action in southern California. Producers of nonmetallics for the most part chose an all-day bus tour on October 5 to see the Riverside Cement Company's plant and limestone mine at Crestmore and the 1,000-t.p.h. sand-and-gravel plant of Consolidated Rock Products Company at Irwindale.

Emphasis at the meeting was, of course, on metal mining, although two separate sessions were devoted strictly to the industrial nonmetallic minerals. Co-chairmen of these two sessions were D. L. Marlett, vice-president of the Great Lakes Carbon Corporation, and William Wallace Mein Jr., president of the Calaveras Cement Company.

Heavy-Media Separation for Gravels

F. E. Legg Jr., professor of construction materials at the University of Michigan and assistant supervisor of the Michigan Highway Department laboratory, presented a paper on *Heavy Media Separation Process for the Production of Specification Gravel for Concrete*. He recounted that his state's road department had long recognized the surface defacement evidenced by pop-outs and spalls and the internal stress of con-

The main aisle of exhibits at the 1957 Mining Show of the American Mining Congress, held in Los Angeles. More than 165 concerns had displays on three floors of the Shrine Exposition Hall.

crete caused by certain rock types occurring in coarse aggregate, and has imposed specification limits on the permissible amounts of these undesirable materials. In the case of architectural concrete exposed to freezing and thawing or of chlorides for ice removal, these limitations are even more severe.

Investigation conducted by the Michigan laboratory on a wide range of glacial deposits in southern Michigan showed that the undesirable material was predominantly in the low-specific-gravity range and that it was susceptible to removal by the heavy-media separation process. Five commercial sand-and-gravel plants ranging in capacity from 100 to 300 tons per hour and employing heavy-media separation have now been established in Michigan at pits formerly considered incapable of providing premium-quality gravels. These are successfully competing pricewise and qualitywise with acceptable aggregates which must otherwise be imported some distance.

Typical of these plants is one operated at Ann Arbor by the Killins Gravel Company. Sink-float equipment consists of a Wemco No. 3M Mobil-Mill. Gravels in the minus 1⅛- plus ¼-in. range are beneficiated. Floats, or rejects, run about 15 per cent of the feed. Media loss is about 8 ounces per ton of gravel.

Diatomite in Calcium and Magnesium Silicates Conversion of diatomaceous silica from his company's deposits near Lompoc, Calif., into several physically- and chemically-different forms of calcium and magnesium silicates was described in some detail by Herbert L. King Jr., research manager of the Celite Dept. of Johns-Manville.

The end products marketed under the Celite trade name have more than a score of uses. The hydrothermal production process consisting of raw material preperation; the reaction step; and filtration, drying, and packaging were described. After grinding, tube-milling, and slurrying, the crude diatomite is mixed with a hydrated-lime slurry and introduced into a heat reactor. This is followed by dehydration, filtering, and drying. The product is packed into bags weighing 20 to 50 lb. for shipping. In-process control is an important feature of this prototype plant, the measurements on the reacted slurry including density, absorption, and X-ray diffraction.

Heat Processing of Pelletized Materials in Cement Making B. H. Puerner, assistant manager of the processing - machinery department of the Allis-Chalmers Manufacturing Company, presented a paper on his company's recently-announced ACL traveling-grate process for burning cement which, he declared, can be adapted to other minerals as well.

Principal features of the process are the pelletizing of the raw mix, drying and initial calcination of the pellets over a traveling-grate device, and final burning in a relatively short rotary kiln. Dust loss and fuel consumption are said to be the lowest ever attained. According to Mr. Puerner, a typical 4,000-bbl. per day plant will save $30,000 a year in recovered dust alone, while fuel economy will be in the range of $120,000 to $240,000 saved annually. Uniformity of product is another important gain. A small scale model of a pilot plant was a dominant feature of the company's equipment exhibit at the show and attracted much attention, particularly from the representatives of the cement industry who were in attendance at the Mining Show. A detailed article on the process appeared in the July, 1956, issue of PIT AND QUARRY.

Perlite, Gilsonite, Oil Shale P. W. Leppla, technical director, Great Lakes Carbon Corp., revealed how the perlite industry has grown from a shaky start in the early 1940's to an industry which today has an annual volume of over $12,000,000. After crushing and sizing, the ore is shipped to over 80 local processing plants in the United States and Canada for expansion in furnaces to produce an extremely lightweight aggregate. Seventy percent of the product currently is used in plaster and 20 percent in concrete. Major sources are located in New Mexico, Colorado, and Nevada.

John H. Baker (American Gilsonite Company, Salt Lake City) revealed some new developments in the mining and transportation of gilsonite currently under way by his company. Instead of shipping the mineral by highway over 200 miles from the plant and deposit at Bonanza, Utah, to a location near Grand Junction, Colo., a pipeline 71 miles in length will carry the slurried gilsonite to its destination. Pipeline pressure will be about 2500 p.s.i. Arriving at the refinery, the product will be dewatered, dried, melted, and refined. End products will consist of gasoline, fuel gas, and coke.

Union Oil Company has undertaken an oil-shale research project to find the answer to one question: Can a merchantable shale oil be produced with petroleum?

A quarry and demonstration plant has been built and is now in operation near Grand Valley, Colo., explained Fred L. Hartley and G. H. Hemmen of the Union Company. Quarrying, crushing, and retorting of the product were described.

Room-and-Pillar Mining at Crestmore Riverside Cement Company's new room-and-pillar mining system at its Crestmore operations was

(*Continued on page* 134.)

Equipment too large or heavy for the Exposition Hall was on display in the big paved parking lot adjoining the building.

42X48 GRIZZLY-KING

—the largest and finest overhead eccentric jaw crushers made.

GRIZZLY-KING superiority

You just can't appreciate the superiority of a Grizzly-King overhead eccentric jaw crusher until you've seen one in action and talked to those who have them.

Owners will tell you about tremendous production capacity, continuous service records, low jaw-die replacement costs, freedom from servicing and adjustment, low power costs.

No wonder Lippmann Grizzly-Kings continue to dominate the giant size (30x42 to 42x48) as well as regular size (12x36 to 24x36) overhead eccentric jaw crusher fields. A Grizzly-King was the world's largest 8 years ago and a Grizzly-King is still the world's largest today — in size (dimension and weight), in output (up to 1200 tons per hour) and in maintenance savings (only lubrication in most instances).

That is why the country's largest producers of crushed stone set production and service records with these Lippmann giants . . . and why others are installing them *now*.

You can get Grizzly-King benefits only by using "Grizzly-Kings." And remember this . . . not one of these big Lippmann crushers — whether 42x48 or smaller — has ever failed or failed to satisfy. Learn about Grizzly-King's advantages by contacting your local Lippmann dealer or the factory direct, today. Lippmann Engineering Works, 4607 W. Mitchell St., Milwaukee 14, Wisconsin.

1100–56–1

Typical comments from Grizzly-King owners everywhere: —

"Wouldn't have any other crusher but a Lippmann"

"Crushed 1,200,000 tons without turning jaw dies . . . and they're still going strong"

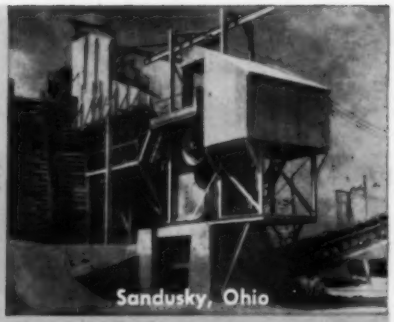
"During the 5 months it has been in service, it has required no adjusting or servicing except for lubrication"

"Maintenance? Haven't even replaced a die-bolt"

"Haven't turned my Grizzly-King dies even after 2½ million tons"

These 42x48 GRIZZLY-KING crushers, the biggest overhead eccentric jaw crushers ever built, are already established as performance kings in output and low-cost operation.

Davidson, N. C.


Sandusky, Ohio

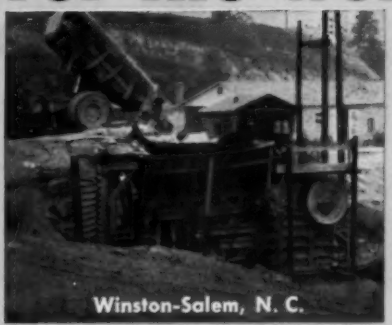
Chattanooga, Tenn.

Elizabethtown, Ky.

South Zanesville, Ohio

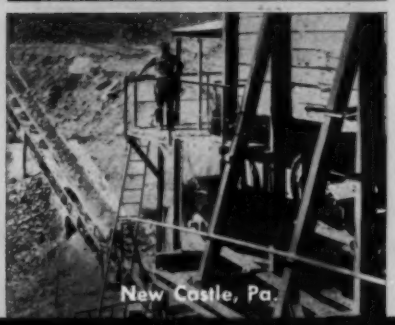
breaking rocks and records ...all over the world

These older installations of GRIZZLY-KING giants have been establishing themselves right along as production leaders in some of the biggest quarries.


Winston-Salem, N. C.

Byington, Ohio

Mitchell, Ohio


New Castle, Pa.

Bloomington, Ind.

LEW LIPPMANN

CRUSHERS FEEDERS SCREENS CONVEYORS CRUSHING & WASHING PLANTS

The Del Monte Lodge, site of the board meetings, as seen from the fairway of the famous 18th hole of the Pebble Beach golf course.

N.S.G.A. Directors

Transact Important Business At Pebble Beach Meetings

By WALTER E. TRAUFFER

Another ON THE SPOT Report

THE boards of directors of the National Sand and Gravel Association and the National Ready Mixed Concrete Association held their semi-annual meetings October 1 to 3, 1956, at the Del Monte Lodge, Pebble Beach, Calif., on the famous Monterey Peninsula. Many important matters of industry and association business, governmental developments, etc., were discussed. No finer location could have been selected from a scenic standpoint, and a wide choice of activities was available for the members and their wives outside meeting hours. The N.S.G.A. board met on Monday, October 1, the N.R.M.C.A. board on Tuesday, and the joint meeting of the two boards was held on Wednesday. The attendance was excellent, and nearly all members brought their wives.

In addition to the usual business reports by members of the staff, officers of the association, and chairmen of committees, the following important subjects were discussed: percentage depletion, taxation, public relations, zoning, stream and air pollution, noise, safety, coming conventions, depreciation practices, group insurance, expanded highway program, retirement plan, price discrimination, cost accounting manual, railroad cars, etc.

The N.S.G.A. board meeting was opened by Roy E. Weaver (Lincoln Sand & Gravel Co.), president of the association. According to Mr. Weaver, the industry and the association are having another record year, and prospects are bright for many years ahead.

At the joint meeting of the two boards Vincent P. Ahearn, executive secretary of both associations, gave a brief resume of plans for the coming joint convention to be held in Los Angeles. The same general procedure will be followed as in previous non-exhibit years, and there will be tours of plants in both industries. The Los Angeles committee will have as co-chairmen N. J. Redmond (Blue Diamond Corp.) and Harry E. Bender (Azusa Rock & Sand Co.), who head the southern California ready-mixed concrete and sand and gravel associations, respectively, and Hal G. Feraud, executive secretary of both.

At the joint meeting the dates and places for several future conventions and board meetings were also decided upon. The 1957 joint conventions will be at the Hotel Statler, Los Angeles, February 11 to 14. The 1958 joint conventions will be at the Conrad Hilton Hotel in Chicago, February 9 to 13, with exhibits there and at the Coliseum. The 1959 conventions will be at the Roosevelt Hotel in New Orleans, February 15 to 19. In 1960 joint conventions and exhibits are tentatively scheduled for the Conrad Hilton and the Coliseum in Chicago, February 15 to 18. The 1961 conventions will go back to the Fairmont Hotel, San Francisco; dates will be February 20 to 23. The 1962 conventions and exhibits are tentatively scheduled for the Conrad Hilton and the Coliseum in Chicago, February 12 to 16, and the 1963 conventions will be in Miami the week of January 12.

The 1957 joint semi-annual meetings of the boards of directors of both associations will be held August 25 to 31 at the Manoir Richelieu, Murray Bay, Quebec. In 1958 these meetings will be held at the Sun Valley Lodge, Sun Valley, Idaho, September 17 to 21. In 1959 they will be at the Lake Placid Club, Lake Placid, N. Y., September 27 to 30. It was also decided for the boards to return to Pebble Beach in 1960 and to go to The Greenbrier, White Sulphur Springs, W. Va., in 1961. Dates in both cases are to be decided on later.

In his report to both associations Vincent P. Ahearn, executive director, urged producers not to take the Robinson-Patman act too lightly. Smaller companies, he said, are in some cases suing larger companies, charging that their prices make it impossible to compete. One company, he said, is being sued for the maximum of $600,000 on this pretext.

According to Mr. Ahearn, five experts from the industry are hard at work on the cost accounting system for the sand and gravel industry, which will be a supplement to the association's *Outline Manual of Cost Accounting for the Sand and Gravel Industry.*

The I.C.C., said Mr. Ahearn, has postponed its decision on the application of the Association of American Railways for more demurrage, etc. Mr. Ahearn was authorized to present a resolution to the A.A.R. opposing any increases. The condition of cars, it was agreed, was never worse. He was also authorized to appear and oppose any move by the railroads to increase freight rates on sand and gravel. The board of directors authorized Mr. Ahearn to protest the present restrictive legislation which requires cars unloaded to be returned by the most direct route to the owning railroad. This is held to create unnecessary car shortages in some areas, especially of gondolas.

At the joint meeting of the two boards reports were given by Andrew C. Thomas (Jaeger Machine Co.), chairman of the Truck Mixer Manufacturers Bureau and C. B. Laird (Eagle Iron Woroks), chairman of the Manufacturers Division. With respect to the convention and machinery exhibits in Chicago in 1958, they stated that ample space will be available for all exhibitors, and some of the undesirable space will be eliminated. At the Coliseum also there will be better lighting and other improvements.

In his report as chairman of the committee on public relations, E. K. Davison (J. K. Davison & Bros.) told of three mailings which were particularly concerned with this subject. Two of these described the manner in which member companies in Chicago and New York took it upon themselves to inform the public first-hand of their operations and rehabilitation plans, with beneficial results. The other mailing was a reproduction of a long article on sand and gravel published in a New York newspaper, a factual article which created wide public interest.

Mr. Davison also described the study and analysis of zoning laws being undertaken by the association. This work is being done by V. P. Ahearn Jr., under the guidance of Charles Horsky. Wide correspondence with members indicates the usefulness of providing suggested permissive sections in zoning ordinances. Mr. Davison said that comprehensive research in zoning law can be of the greatest importance in providing executives of member companies with a good, useful background in their contacts with zoning bodies.

Correspondence within the Public Relations Committee has shown that many committee members feel that the Board of Directors should authorize the use of professional help in preparing a publication which would present the following phases of public relations subject:

(1) The importance of the sand and gravel industry to the economy. This treatment would be carried as far to the local level as statistically possible.

(2) Descriptions and pictures of some of the outstanding rehabilitation projects of member companies.

(3) Outstanding public relations contacts by member companies, such as those mentioned above.

(4) The basic legal principles concerned in the enactment and administration of zoning laws, and their relation to individual property rights.

(5) Examples of zoning laws which have been helpful in orderly development of the sand and gravel industry.

The publication would contain both new material and most of the material on the subject which has been sent to the membership piecemeal over the last ten years. It would provide for the addition of future material.

This project, according to Mr. Davison, would be expensive but would be well worth its cost. At the later joint meeting it was voted to authorize $10,000 to be used for this work in advance of the 1957 convention. Others present commented on the importance of this problem to

(*Continued on page* 93)

Roy E. Weaver (Lincoln Sand & Gravel Company), president of the National Sand and Gravel Association (right), with Robert S. Barneyback (Henry J. Kaiser Company).

C. A. Barinowski (Montgomery-Roquemore Gravel Company), keeping up with the news between sessions at Pebble Beach.

E. R. Booker, executive secretary of the northern California sand and gravel and ready-mix associations.

Labor Developments

The Aging Worker

By S. HERBERT UNTERBERGER

S. Herbert Unterberger and Company
Economists-Consultants on Labor and Industrial Relations
Washington, D. C.-Philadelphia, Pa.

RECENTLY a great deal of attention has been focused on the problem of the older worker. At the direction of James P. Mitchell, Secretary of Labor, the U. S. Department of Labor has undertaken a series of studies designed to illuminate the problem and, where possible, to point up ways of solving it.

To date, the studies have revealed primarily that many of the usual notions that prevail about older workers are not necessarily accurate. For example, a study of job performance as related to the worker's age showed that in the case of output per man-hour, there is, in general, a stable average performance level through the age of 54. Thereafter, some falling off occurs in the average for the 55-64 year group, but the falling off is not very great. Generally, the output of this older age group is within approximately 10 percent of the output in the most productive years.

Of special importance is the Labor Department's observation: "Variations in the output of persons in the same age group were very large—in fact, they were greater than the differences in average output among age groups. This means, for example, that many workers aged 55-64 had output rates which were actually greater than the average rate in the age group with peak production. Conversely, many younger workers had output lower than the average for older workers."

From these facts the Labor Department draws an important conclusion, namely: "Insofar as practical implications are concerned, these data emphasize the fact that an employer, in considering an applicant for employment, should evaluate the experience, skills, and abilities of the individual, rather than immediately drawing conclusions from his chronological age."

In another study, the Labor Department came to the conclusion that the cost of private pensions should be no real obstacle to the hiring of older workers, This was based on the report of a committee of experts appointed by Secretary Mitchell, which pointed out that the reasons generally given for not employing older workers because of pension considerations are: (1) that the costs of providing adequate pension rights are much more for an older new employee than for a younger one; and (2) that to permit older new employees to waive pension rights, or to earn less than "adequate" pension rights would create an unfavorable public reaction.

In the view of the Labor Department researchers, these reasons are really not as strongly grounded as they at first appear. While newly-hired older men are more likely to become eligible for pensions than newly-hired younger men who may die, become disabled, or quit before they are eligible, much of the cost saved because of this turnover is counteracted by the cost of life insurance or disability payments. Furthermore, because of the tendency toward increased life expectancy, many of the younger men will spend more years in retirement and, hence, more years on a pension than the older men. Also newly employed older men are less likely to retire at the earliest possible age, primarily because of their limited pension rights; and hence their period of retirement is also relatively reduced. Finally, where pension rights are vested, contributions on behalf of an employee are not recovered if he leaves his employment. This fact further tends to equalize the cost.

This committee also went into the question of whether the related benefits of group life insurance, workmen's compensation, and sickness and accident insurance costs a great deal more for older workers and concluded that that notion is mistaken. They observed: "If benefits for dependents include maternity care, the package cost may even be less for the older man."

Considering the overall picture, the committee concluded: "Selective hiring of older new workers from the community can hardly add more than a small fraction of one percent to the current annual charges for the compensation package, and may or may not add anything to the ultimate cost of pensions."

The Short Work Week

Vice-President Nixon recently set off some fireworks when he predicted that a four-day work week may not be too far away. Recognizing the propaganda value of the Vice-president's wishful (or perhaps wistful), thinking, Walter Reuther, president of Automobile Workers of America promptly challenged him to take steps to turn his prediction into a reality.

While a four-day standard work week is still virtually unknown in American industry, standard work weeks of less than 40 hours are by no means uncommon. Important industries such as those of women's clothing, tires and tubes, printing, brewing, and large segments of building construction, now have such shorter work weeks.

For the most part, however, this does not mean that the employees necessarily work less than 40 hours a week. Particularly when there is work to be done, and frequently on a regular basis, 40 or more hours are worked, but the difference generally is that the additional hours are paid for at penalty rates.

Actually, there is very little evidence that workers really want the additional leisure which a four-day week would give them. Any experience with the squabbles which frequently occur over who gets the overtime will indicate that the more frequent desire is to work at the higher rates, rather than to go fishing.

The experience of the rubber industry is a significant case in point. Here a 36-hour week of 6 hours per day, 6 days a week, has been in effect for over 20 years. It was introduced initially during the Great Depression

(*Continued on page* 93)

N.L.A. Operators' Meeting

(*From page* 81)

easier to train an operator to drill with a rotary; and a high-speed unit of the latter type will, on the basis of footage, replace three to five conventional well drill machines.

Mr. Witmer stated that he had contacted many drill manufacturers with the question of how, on the basis of a known quarry formation, a quarry operator would go about selecting the proper drill for his operation. It was indicated that in the opinion of all manufacturers contacted there was no question about drilling limestone with rotary equipment.

Further, there is no set rule for selecting a drill, either by quarry operators or manufacturers; the main factors are a proper bit, enough bit pressure to penetrate the formation, and a provision for cleaning cuttings away from the bit and the mouth of the hole.

Underground Storage Due to an unfortunate illness, Irving Warner, vice-president of the Warner Company, was unable to attend and present his report on the survey of standby fuels and installations for both rotary and vertical kilns. However, copies of his paper were made available to the members in attendance, and the subject is reviewed elsewhere. Russell W. Hunt, president, Southwest Lime Company, Neosho, Mo., was requested to take over this part of the session to report on underground warehousing, as developed by him and others in abandoned underground limestone operations.

It was pointed out that officials in Washington are quite interested in this situation. The United States Navy, for example, wishes to move material not only out of multi-storied warehouse buildings but also away from population centers. It was noted that storage of ordnance equipment already accommodated at Atchison, Kans., has proved highly satisfactory. This move is said to have saved the United States considerable money in warehousing.

In describing his area as an example of one ideal for this type of storage, Mr. Hunt stated that it is above water and is covered by an excellent formation. He said that he has already prepared 53,000 sq. ft. of black-topped underground area which is equipped throughout with a sprinkler system and electric lighting. An additional section 600,000 sq. ft. in area is in the process of being similarly prepared.

Mr. Hunt noted that the government interest in underground storage areas has led to federal action in the condemnation of property by eminent domain. This, Mr. Hunt pointed out, is exceedingly unfair to the quarry operator or quarry owner, who has a right to expect a fair price on usable areas. Noting that he has established a rate of rental, in other words fair value, in combating government action of condemnation, Mr. Hunt stated that he has rented the 53,000 sq. ft. at a rate of 10 cents per sq. ft. per month. He pointed out that it would cost up to $20 per sq. ft. to construct storage facilities with the same protection above ground.

Plant Safety In describing the safety program of the Ash Grove Lime plants, Robert Cox, treasurer of the Ash Grove organization, stated that from the very beginning the company has taken an active interest in the safety of personnel employed. The combined effect of company-sponsored activities and individual effort, it was said, has resulted in six and one-half years without a lost-time accident at the Springfield plant.

This remarkable record was ascribed to the fact that each man in the crew takes an individual responsibility, not only for his own safety, but also for those working around him. In effect, it was noted, each man is actually operating as a safety engineer. Mr. Cox pointed out that this has produced not only an outstanding safety record but also an unusually high degree of *esprit de corps* on the part of the plant crew.

While the safety program at all Ash Grove plants is the same, it was noted, universal acceptance and effort has been realized at the Springfield operation. In the Ash Grove organization, Mr. Cox stated, management makes a strong effort to help foremen with operating problems—thus enhancing an understanding of new procedures and equipment which is necessarily reflected in safe operating.

Pointing out that safety is a way of life and must be so regarded and lived, Mr. Cox noted that everyone, management included, must assume a part of the responsibility for individual injury.

In the realm of management responsibility, it was pointed out that no job should be regarded as justifying unsafe procedures. It was indicated that failure to achieve a safety peak is due largely to the failure of management to hold basic safety beliefs and to transmit the proper attitude to the employees.

Drawing an analogy to the rigorous traffic enforcement rules which have produced results in many parts of the country, Mr. Cox stated that management must realize that adoption of rules is actually directed at a small number of a given plant's total personnel who might otherwise tend to disregard regulations. Therefore, he pointed out, disregard of safety rules cannot be condoned. They must be enforced.

If employees know that the management means business, they will follow suit, it was said. With the suggestion that penalties should be established for infraction of rules in the light of potential injuries, it was added that there must be a sincere strong belief on the part of management that safety promotion is a vital procedure.

Safety Awards Announcement of winners of safety awards and certificates was made by Kenneth A. Gutschick, a new member of the N.L.A. staff, who was introduced by Robert Boynton, general manager, National Lime Association. Mr. Gutschick, formerly on the edtiorial staffs of PIT AND QUARRY and later of *Rock Products,* recently took the post of manager of technical services for the association.

Three types of safety awards were presented at the meeting — *Rock Products* trophies to the leader in each of the three categories of the safety contest, N.L.A. safety certificates to all 11 accident-free companies, and a certificate of membership in the association's 1,000-Day Club.

In Class A-1 (quarries with calcining plants operating more than 100,000 man-hours without a lost-time accident) the trophy-winning operation was the Genoa, Ohio, plant of U. S. Gypsum Company—547,282 man-hours.

In Class A-2 (quarries with calcining plants with less than 100,000 man-hours) the trophy winner was the Diamond Springs, Calif., plant of Diamond Springs Lime Company —96,960 man-hours.

The trophy for the Class C category (calcining only) was awarded to the Ludington, Mich., plant of the Dow Chemical Company — 92,896 man-hours. The latter plant was also awarded the N.L.A. certificate of membership in the 1,000 Day Club. These three plants, along with eight others, were also awarded the N.L.A. certificates of achievement in safety.

(*Continued on page* 93)

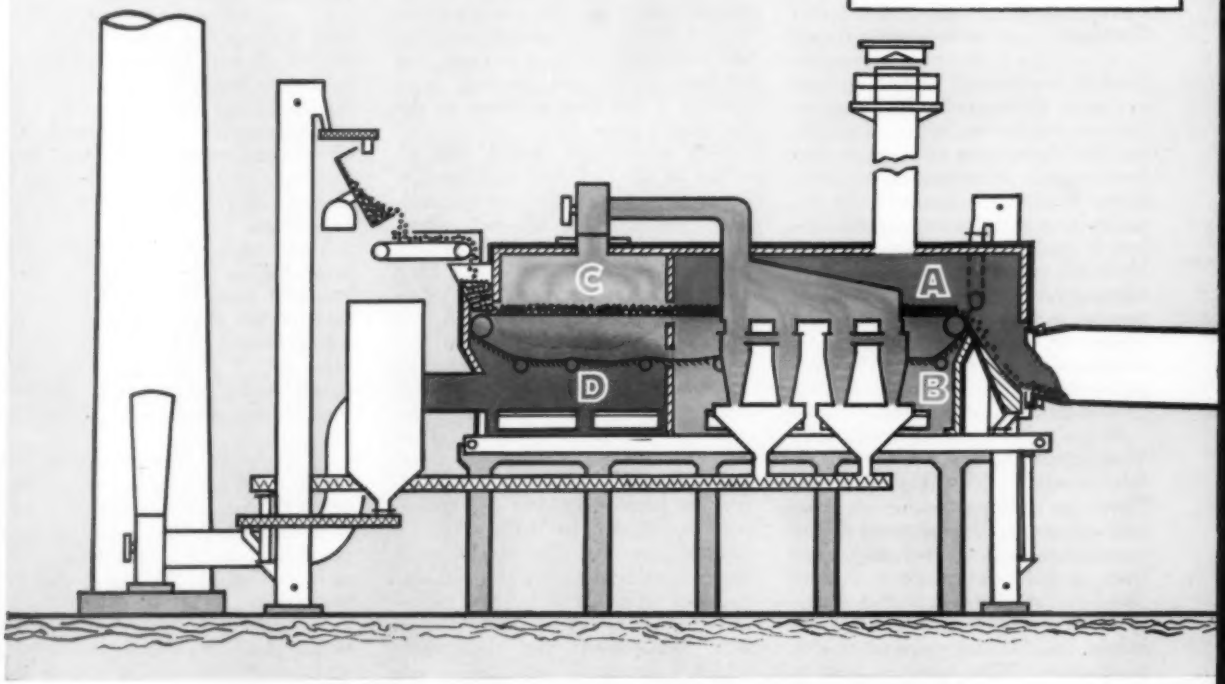
THE ACL SYSTEM

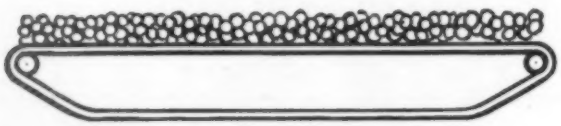
Cuts Cost

...puts you in a better competitive position—HERE'S WHY

LESS DUST LOSS

Double pass of gases through traveling bed of pellets reduces dust loss below 1% of feed weight without an additional dust-collecting system. Valuable processed material is saved. Dust load of exhaust gas is lower than in any other system.



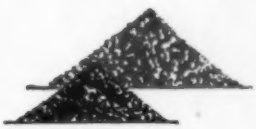


Traveling Grate Affords Many Advantages Because feed volume on traveling grate is constant, kiln operation is uniform and more efficient. There is no segregation of mix. Pelletizing locks in and maintains proportions of components. "Flushing" is eliminated, "ringing" minimized. Voids between pellets permit escape of moisture and gases without fluidization of bed. Because clinker maintains pelletized characteristics, it moves through the rotary kiln uniformly and burns easily.

EFFECTIVE DUST FILTRATION . . . efficient heat transfer . . . more uniform, better burning clinker . . . substantial savings in fuel, power requirements, space and manpower . . . maintenance economy—all these im-

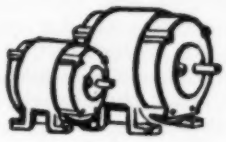
ALLIS-

of Producing Cement



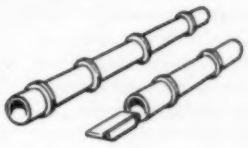
LESS FUEL

Fuel consumption for ACL systems now in operation averages 600,000 Btu per barrel of clinker. Conventional long, dry-process kilns range from 750,000 to 1,000,000 Btu. Powdered coal, fuel oil, natural or coke oven gas may be used.



LESS POWER

The ACL system for burning cement clinker requires about 2.3 kwhr per barrel of clinker for operation of kiln department. This is about one-third less power than required by rotary kilns using other preheating systems.



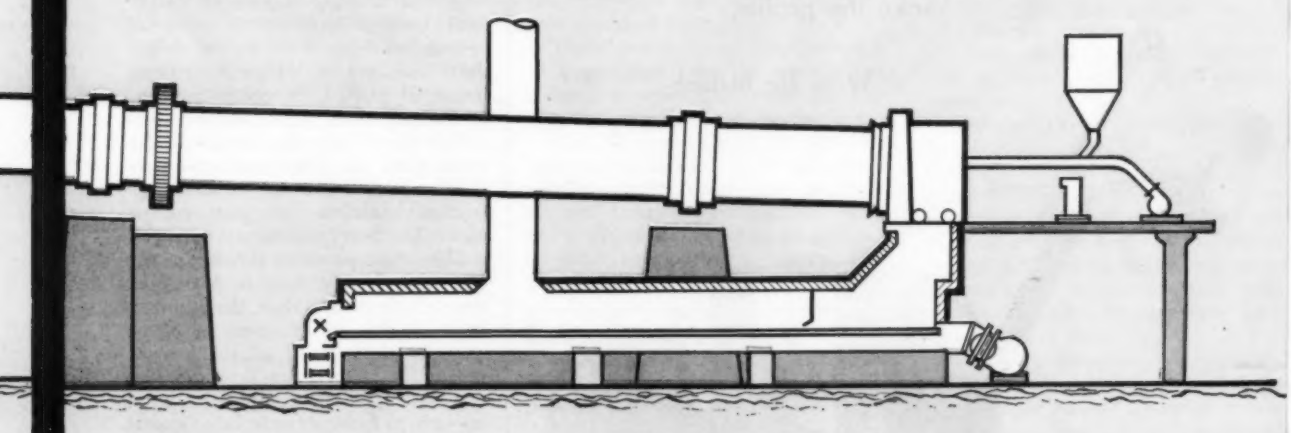
LESS SPACE

Entire ACL system—grate, kiln and cooler — is about 40% shorter than conventional long kiln installations. The totally enclosed traveling grate is about as high as the average kiln feed end housing.

How the Double-Pass System Works

Partial calcining and dust reclamation take place as hottest gases pass through the pellet bed on traveling grate. Gas temperatures are reduced from about 1800 to 500 degrees in this first pass (*A* to *B*). Next, gases pass through cyclones where larger dust particles are removed, and carried back to pelletizer. Final dust filtering takes place as gases pass through moist pellets on feed end of grate. In the second pass (*C* to *D*) gas temperatures are further reduced.

ACL is an Allis-Chalmers trademark.



portant advantages, and many more, are yours with the ACL system.

New Bulletin Available A new bulletin, describing the ACL system, Allis-Chalmers kilns and kiln auxiliaries, is ready for distribution. To get your copy, see your nearby Allis-Chalmers representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin. Ask for Bulletin 07B8431.

58 Installations by Lellep Licensees since 1950

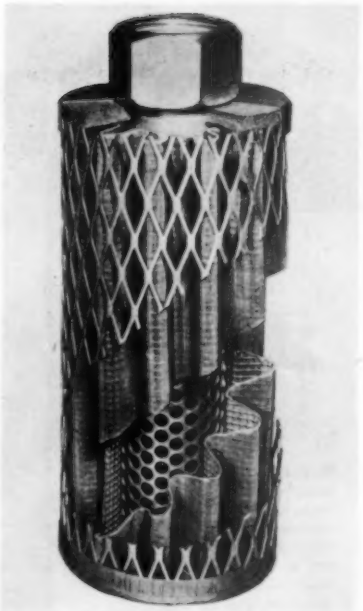
CHALMERS

A-3108

Proper Hydraulic Filtration Needed for Efficient Work In Pit and Quarry Field

Pit and quarry operators are becoming more and more aware of the vital role hydraulic filtration is playing in the reduction of "down time" in their operations. Experience has taught these operators that their equipment must run smoothly and almost constantly if they hope to realize a reasonable profit from their operation. Many pieces of equipment now being operated in the pit-and-quarry field use hydraulic systems, and plant owners have found that it is vitally important to keep these systems in working order.

Because of the abrasive nature of practically all nonmetallic minerals, protective measures have to be taken to keep these minerals out of the mechanisms of the equipment handling them. Using a filter on the hydraulic system has been found an excellent means of protecting this operation because it does a very efficient job of keeping the hydraulic fluid free of foreign particles which would be exceedingly injurious to its



A cut-away view of a modern filtering device.

operation. Keeping these particles out of the hydraulic system is accomplished by intercepting them at their source. To accomplish this the filter in the pump or on the intake line is placed between the hydraulic fluid reservoir and the pump. Failure to take this filtering precaution could easily result in an impaired hydraulic system resulting from scored cylinders and valves, clogged orifices, damaged pumps, excessive heating, and a number of other malfunctions.

It is very important to choose the right filter for your hydraulic system in order to provide the best protection available for your equipment. The best protection is given by a filter that provides maximum filtration over the longest period of time. This means that the filtering area of the device must be large enough to filter out all the foreign matter in the hydraulic fluid. Its storage capacity must also be large enough to hold a fairly large quantity of the filtered particles. If its capacity is too small, the filter soon becomes clogged with foreign matter and is rendered inactive. When this happens the filter must be serviced or changed, causing down time. Frequent servicing or changing of a filter which is too small can soon run into a considerable loss.

Consider the job you want done by the hydraulic system on each piece of equipment; then select the filter that will enable this system to perform the task most economically. Lost machine time means lost profits.

DEPENDABLE
MOBILE EQUIPMENT CARRIERS

When materials must be double handled . . . . Mobile Equipment Carriers make the profits.

Write for Bulletin

AVAILABLE CARRIERS

AVAILABLE CARRIER MFG. CO., 2501 ELSTON AVE., CHICAGO

N.S.G.A. Directors

(*From page* 87)

the industry. C. G. Cooley (Cooley Gravel Co.) announced that the Colorado Sand and Gravel Association has been formed, with the primary purpose of working on zoning problems, and that it will spend $16,000 on this work in the next six months alone.

A feature of the joint session was the presentation on the Federal Aid Highway Act of 1956 by Ezra C. Knowlton (Utah Sand & Gravel Products Corp.). After briefly reviewing the history of this act and the features of the program, Mr. Knowlton pointed out that this 41,000-mile network of roads hits most state capitals and big cities, and that it is without traffic lights. He showed on a map the chaos which would have resulted in a few more years of haphazard independent toll road and freeway construction.

Mr. Knowlton urged that everyone watch carefully locally and nationally to see that these highway plans are carried out as intended and are not emasculated for the benefit of special interests. Moreover, we must not lose sight of the fact that implementation of this program lies with the individual state highway departments. Many of these departments are understaffed and lack necessary facilities Mr. Knowlton declared, and he urged that members of this industry take an active interest in the progress in their areas.

J. Rutledge Hill (Gifford Hill & Co.), chairman of the committee on taxation, reported little change in the situation but warned that there is strong opposition to percentage depletion in some places. He also pointed out that the iron ore mining industry had been turned down on capital gains for owners of property leased on a royalty basis.

In his report Stanton Walker, director of engineering for both associations pointed out the growing importance being attached to flexural strength tests. Once serving only as guides, such tests are becoming the basis for the acceptance of concrete in many quarters. For this reason the association has in the last two years devoted much of its laboratory time to the study of these tests with aggregates from all parts of the country. Mr. Walker pointed out that flexural strength tests are very sensitive to outside influences which are difficult to control. Just letting a specimen dry for a few days before testing it can lower its strength 35 percent, and field tests are especially vulnerable. The laboratory tests are covering all angles, including comparisons of sawed and molded specimens.

Mr. Walker also commented on the aggregate evaluation program, which is an attempt to arrive at a more logical basis than is now possible. The laboratory will test any aggregates sent in for this purpose, with special emphasis on concrete aggregates. All the usual tests are made, such as freezing and thawing, mineral composition, etc.; and in some cases petrographic, chemical reaction, and other tests are also made.

According to Mr. Walker, 50 percent of the laboratory budget for the last two years has been used on flexural strength tests. He commented on the tendency of using the largest aggregates possible in forms—6-in., 2½-in., etc.—and expressed the hope that research will show that there is no advantage in this procedure; that on the contrary, the smaller sizes have advantages. This would open some markets to producers now barred by size requirements.

In connection with the associations' group insurance plan, it was reported that the teamsters union in Boston had approved of its members in that area coming under the plan, with the result that there are now 200 more men under the plan, and the ready-mix association has three new member companies.

There was considerable discussion of a proposal that the associations sponsor a retirement plan for employees and officials of member companies. It was pointed out that the associations already have full information on the plans now in force among member companies. The board approved a motion to appoint a joint committee to study this proposal.

Labor Developments

(*From page* 88)

of the 1930's, primarily as a spread-the-work device. In recent years there has been great pressure, primarily on the union officials in that industry to drop the 36-hour week.

According to a study made in Akron by union officials, at least 10 percent of the rubber workers had second jobs at which they worked eight hours daily, and 30 to 40 percent of them held part-time jobs in other industries. The union officers proposed a return to the 40-hour week, and in some contracts the change was actually introduced.

Evidence like this suggests that the Vice-president's prediction is unlikely to come to pass soon. A further reason that the move to the shorter work week is likely to be gradual rather than precipitate is that workers are unlikely to be willing to give up any of their take-home pay.

The maintenance of real earnings despite shorter hours is, in the long run, contingent upon an increase in productivity to make up the difference. Increasing the productivity of the economy is also a slow, gradual process, but it has been happening; and the shorter work week will follow when it is economically feasible.

N.L.A. Operators' Meeting

(*From page* 89)

Kiln Survey The paper prepared and submitted for distribution to the operators by Mr. Warner dealt with a survey analysis report on kilns using natural gas and stand-by fuels.

On the basis of a questionnaire sent by N.L.A. to known users of natural gas in both rotary and shaft kilns, analyses were made with respect to output, efficiency, life of lining, scaling, stand-by fuel, and other factors.

In rotary units previously fired with coal or oil, most returns indicated an output ranging from 3 percent lower to 10 percent higher. Shaft kiln figures, however, showed output increases of 15 to 100 percent. There appeared to be a general loss of efficiency—up to 20 percent—in the rotary units, but shaft kilns realized an increase of 15 to 20 percent (over coal).

The majority of reports from rotary kiln users, and all of those with shafts, indicated a greater ease of firing control with natural gas. With respect to quality of product, all shaft kiln reports and the majority of returns on rotary kilns indicated an improvement in comparison with quality realized with previously used other types of fuel.

While the majority of questionnaires on shaft kilns indicated no standby fuel systems, those on rotary installations included both coal and oil. Changeover time reported for the former was recorded by the majority as instantaneous, and that for oil ranged from 2 to 30 minutes.

Banquet At the annual banquet the members were addressed by the Honorable Dewey Short, Republican Congressman from the 7th Missouri Congressional District. Along with a colorful portrayal of the initial settling and later development of the Ozark "empire," Congressman Short underscored the contribution which the lime industry is making to the economy of our country.

CHAIN SYSTEM INSTALLATIONS IN CEMENT KILNS

PART I

By W. R. DERSNAH
Process Engineer
Portland Cement Association

INTRODUCTION

FOR a number of years, until very recently, the trend in portland cement manufacture was toward the wet process. This trend away from the dry process with its particular inherent economies can be attributed to the ease of grinding and blending and the lower dust loss, in addition to the obvious desirability of the wet process in instances where the raw materials contain high percentages of moisture. The construction or rehabilitation of plants during this period has resulted in a ratio of 60 percent to 40 percent in favor of the wet process for plants now operating in the United States and Canada.

To improve thermal economy in wet-process plants, chain systems are commonly installed in the upper portions of kilns. This is a study of such systems. The desirability of a study to determine the most efficient and economical arrangements of chains for heat exchange is emphasized by the necessity for evaporating 250 to 550 lb. of water per bbl. of clinker in wet-process kilns.

In response to inquiries made during this study, replies from 75 wet-process plants were received with information regarding chains. There were 58 plants which reported the use of chains, filters were reported by 9, and waste heat boilers by 4. The remaining 4 wet-process plants used no form of heat recuperators, but 3 of these were equipped with short kilns of about 125 to 175 ft. Only 1 plant reported the operation of long wet-process kilns without heat exchangers or recuperators.

This report covers factors concerned with chain system equipment and kiln operation as associated with chains. The information was collected during visits to selected wet-process plants where chains are used and by correspondence and discussion with representatives of chain system manufacturers. The plants were chosen to include a wide variety of chain systems, maximum ranges in slurry moisture, different suspension methods, and kiln operating technique as concerned with such factors as percent capacity operation, draft, and raw material differences. Particular attention was given to (1) chain system length and position in the kiln, (2) chain weights, densities*, and shapes, (3) consumption and maintenance, and (4) changes as shown by experience to be required for improved operation.

Kiln operation was analyzed in relation to (1) raw materials used; (2) fineness, stack dust addition, and moisture content of slurry; (3) waste gas temperatures and compositions; (4) kiln speed and inclination; (5) draft; (6) dust and mud ring formation; (7) cycling; and (8) percent capacity operation.

The general discussion is concerned with types of equipment and operational procedures concerning the use of raw materials with this equipment. A tabulation of data received on the use of chains follows the discussion.

In the summary, adjustments or conversions have been made on moisture evaporation in various chain systems, to show what might be expected in comparable kilns and chain systems in different plants.

The factors which determine the design of chain systems have been coordinated and further discussed.

*Densities are in terms of lineal feet of chain per cu. ft. of kiln volume involved in the installation, unless otherwise noted. Densities also may be given in terms of pounds or sq. ft. of surface area per cu. ft.

Fig. 1—Curtain chains: cross-sectional suspension.

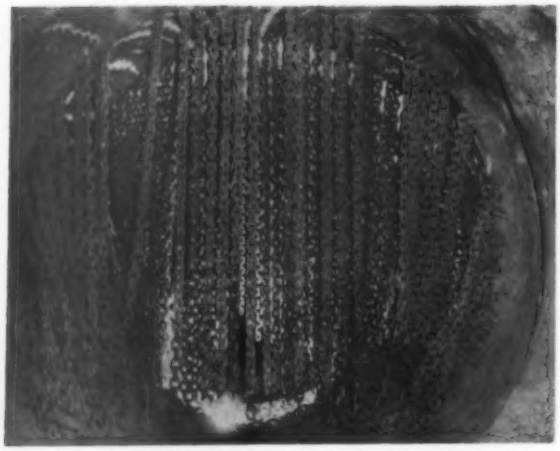
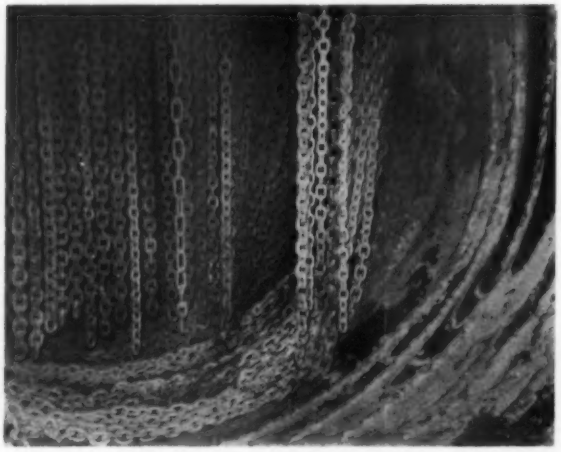


Fig. 2—Curtain chains: helical suspension.



How LINK-BELT'S complete screw conveyor service

saves you time
spares you details

Here's a single, all-inclusive source for standard or special requirements

This four-point program provides quick and easy answers to any screw conveyor problem. Link-Belt offers you the widest range of component types and sizes. For example, you choose from 17 basic screw designs—in any suitable metal to meet temperature, corrosion, sanitation, abrasion and other requirements . . . in a full range of diameters, gauges and pitches. Whatever you need in components . . . and to whatever extent you require engineering counsel — Link-Belt will devise a system "tailored" to your specific needs. Ask your nearby Link-Belt office or authorized stock-carrying distributor for 92-page Data Book 2289.

◀ **SCREW CONVEYORS** are readily adaptable to inclined (left), horizontal or vertical handling of bulk materials.

1. **ANALYSIS AND ENGINEERING** service is provided by a district sales office in your area. Link-Belt district engineers can quickly ascertain the best conveying arrangement for your specific application.

2. **COMPLETE LINE OF SCREW CONVEYOR COMPONENTS** and related elevating, conveying and power transmission equipment is your assurance that specific needs will be fulfilled most efficiently and economically.

3. **EASY ERECTION** is achieved because of prefitting, match marking, close-tolerance manufacturing and layout drawings. Link-Belt will handle entire erection assignment if you wish.

4. **SATISFACTORY PERFORMANCE** is assured when you rely on Link-Belt as a single-contract source for your complete system. We will accept full responsibility for placing it in operating readiness for you.

LINK-BELT

SCREW CONVEYOR EQUIPMENT

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World. 14,288

LINK-BELT'S COMPLETE LINE OF INTEGRATED COMPONENTS INCLUDES:

SCREWS · HANGERS · TROUGHS · SPOUTS & GATES · SHAFTS & COUPLINGS · TROUGH ENDS · DRIVES

EQUIPMENT

Types of Chain Systems Chain installations are here referred to in two main classes or types: (1) the curtain system, in which only one end of the individual length is fastened to the shell or suspending arrangement; and (2) the loop system, in which both ends are attached. The loop arrangement is also referred to by the terms festoon, circular, and spiral, depending on the path the loop follows as dictated by the position of the hangers in the kiln. Because the qualifying adjectives spiral and circular in this regard are determined by the attaching position, rather than as an indication that both ends of a chain length are fastened, the terms "curtain" and "loop" will be used to differentiate between the two classes of chain systems.

Curtain systems are generally of local plant or company design, differing in individual chain length, suspension method, density, and link stock, as well as in the differences in system length which would be true for and in both classes.

Manufactured or commercially designed chain systems are of the loop type; the suspension method and link shape are patented. However, several cement plant operators have designed and installed loop systems of their own.

The necessity for avoidance of obstruction to the slurry flow accounts for the primary differences between the two systems.

A brief description of the two systems and their patterns follows:

Curtain Chain Systems In this setup only one end of the chain is attached.

a) Cross-Sectional Suspension — In this system a series of chains is attached around the circumference of the shell in rows which are perpendicular to the axis of the shell, thus forming a series of parallel curtains of hanging chains. No significant forward action is given to the slurry by this arrangement. In fact, as the point of chain attachment revolves to the bottom during kiln rotation, the corresponding free-ended chain piles up on the floor of the kiln and the chains thus form a series of dams which retard the flow of the slurry down the kiln.

b) Helical Suspension — In this system each chain is suspended a uniform distance in front of the previous chain both in direction of kiln rotation and in direction of slurry flow. Thus, a plane passed through the points of suspension forms a spiral or helix rather than a circle perpendicular to the kiln axis. The system is built up by adding successive spirals placed in parallel. This helical suspension method has two major advantages over the cross-sectional suspension method. As the suspended end of the chain is raised by the rotation of the kiln, the slurry is pushed along in a gentle wave. Also, since each chain is offset from adjacent chains, when the chains are deposited on the kiln floor during its rotation, they tend to cover the floor uniformly and more completely than occurs with cross-sectional suspension and without the succession of chain dams.

Loop Chain Systems In this system both ends of each chain are attached.

a) Cross-Sectional Suspension — This system and suspension method is by far the most widely used type of all. It is used in 86 percent of the chain-using plants covered by this survey. In this system the equipment used to attach or suspend chain ends in the kiln is mounted in parallel rows around the circumference of the shell perpendicular to the shell axis. Installations are made by attaching one end of a series of chains at equal distances apart on the first cross-section (or rib) at the feed end.

The other end is then carried down the shell by-passing one or more cross-sections of attaching equipment, and then attached about one-third of the circumference around and in the direction of kiln rotation. Additional chains are then fastened in a similar manner from succeeding ribs. The length of chain installed is such that the bottom of the loop, at its highest point during the rotation of the kiln, is about one-third of the kiln diameter above the bottom of the kiln.

Chain lengths for loop systems are usually described in degrees of kiln circumference. Thus a 135-degree chain would be 135/360ths of the kiln circumference in length. This manner of designating length permits similar designs and installations to be made in kilns having various diameters.

b) Helical Suspension—This system differs from the cross-sectional suspension system in that the chain

Fig. 4—Right: Loop chains: helical suspension.

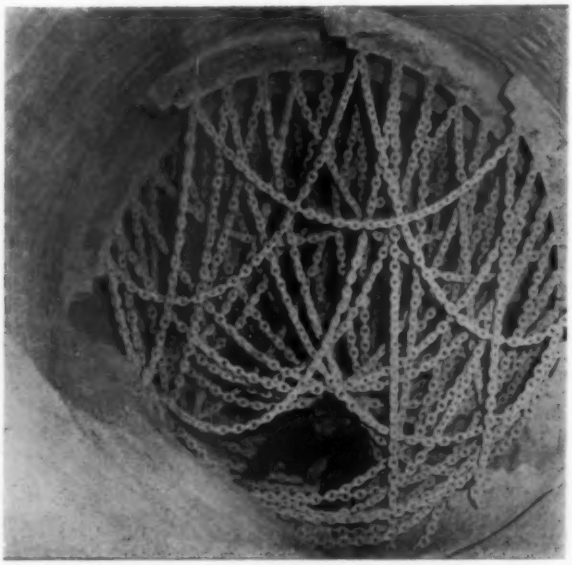


Fig. 3—Below: Loop chains: cross-sectional suspension.

attaching equipment consists of a rib or a flange with a wide vertical edge which is welded in adjoining segments to the kiln shell to form a spiral, helix or screw. A series of these ribs are installed parallel to each other and generally a uniform distance apart. Hence, as the kiln turns, the ribs cut into the slurry, acting as a screw to convey the slurry down the kiln toward the firing end.

The chains are attached in a manner somewhat similar to that described in the preceding paragraph, except that the chain is attached to form a loop in a cross section at right angles to the kiln axis. A combination of loop lengths of one-fourth (90 degrees) and approximately one-third (135 degrees) of the kiln circumference are used to produce the desired density.

The four basic types of chain systems are shown in figures 1 to 4. Modifications have been made by the manufacturers and by plant operators to improve efficiency, decrease maintenance, or compensate for operational differences.

The most desirable chain system is one so designed as to permit efficient entry of the slurry, suitable exit gas temperatures, absence of mud rings, suitable moisture content of the nodules issuing from the system, and kiln gas temperatures and oxygen contents entering the system which are compatible with low chain replacement requirements.

Lengths of Chain Systems The trend to longer kilns in the cement industry results from increased capacity and efficiency possible with this type of equipment. It is desirable to have a chain system of minimum length which will perform the work required and expected, thus allowing a greater effective kiln length. In this respect, consideration must be given to chain density, weights and surface area, as well as to chain section diameters. However, these factors will be discussed as separate entities in this section and co-ordinated in the summary.

Commercial chain systems have a prescribed density and weight or surface area determined by the manufacturer on the basis of slurry moisture. In order to adjust a system of prescribed density to a particular operation, changes are usually made in the length. At a given capacity of the kiln, changes may be required to adjust the back-end temperature, to obtain the proper moisture level in the nodules, or to prevent rings.

Very often the length of a chain system is determined by the operation of the equipment. When production is of overriding importance, kilns may be operated considerably above their rated capacity. This practice results in a high draft which carries gases to the chain system at higher temperatures. Sometimes the heat of the gases with excess oxygen is enough to damage the chains in the lower end of the system, and these chains are then removed. If they are not replaced, a shorter chain system results. In effect, this means increasing the moisture of the nodules leaving the chain section, so that a part of the heat is used to evaporate the moisture; and the temperature is subsequently lowered.

In passing through a chain system, slurry of 25 to 50 percent moisture content is changed to nodules which contain about 10 percent or less water. Some kilns are operated so that the material leaving the chain section contains no moisture.

At a certain point in the chain section during the moisture reduction, the slurry becomes sticky (particularly if it contains plastic or colloidal sized particles) and often sticks to the chains or the kiln shell to form mud rings. The location of these mud rings may be altered with changes in the length of the chain section. The purpose of changes in the chain section length is not to change the location of a mud ring, but to pass the material through the sticky state rapidly enough to keep rings from forming. By removing chains from the lower end of the system it is possible to concentrate gases of a higher temperature at this critical point, so that the slurry will pass through the sticky condition more rapidly, with less chance of mud ring formation.

In general, loop systems are more effective in transferring heat from the gases to the slurry since the total loop length, covered with slurry, is exposed to the hot gases for a greater fraction of the kiln's rotational period. Assuming the density, weight, and area to be the same, a loop system would be somewhat shorter than a curtain system to accomplish an equal moisture reduction. In addition to exposing the slurry for a greater length of time, a loop system also carries a larger volume of slurry through the gases where it is exposed to the heat. On the other hand, a dense curtain system acts as a better dust collector.

The majority of chain systems observed ranged between one-fifth and one-eighth of the total kiln length. There were extremes of one-fourth and one-twentieth in individual cases.

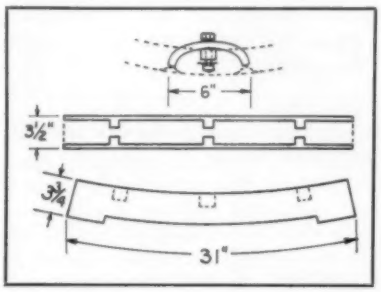
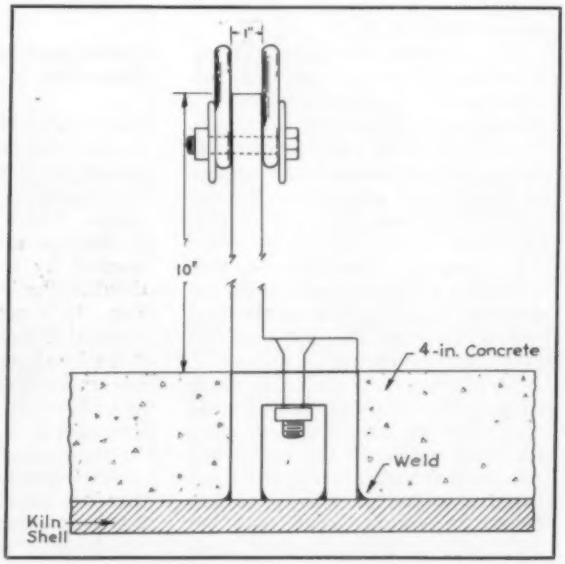
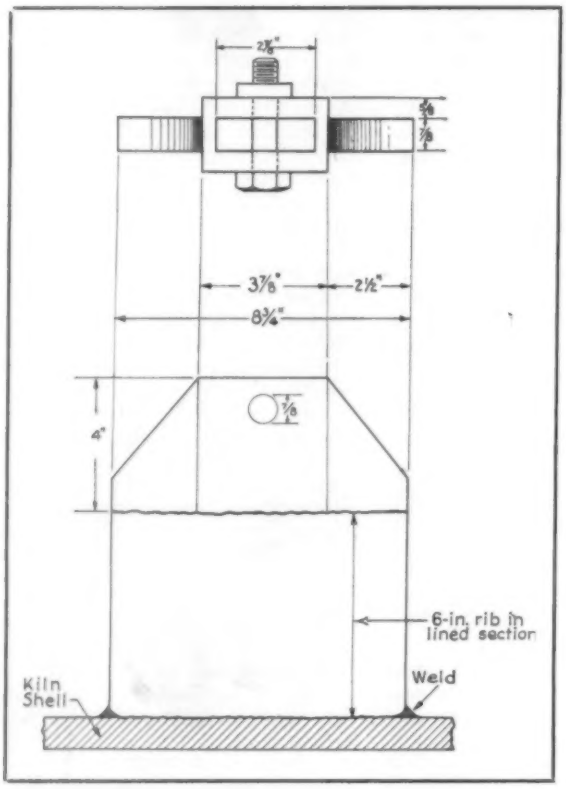


Fig. 5—Right: Segment and yoke.

Fig. 6 — Below: L-shaped rib, bolted to the channel, with bolted end link.





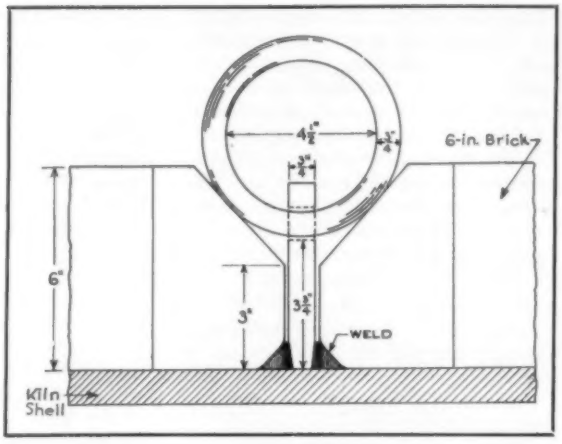


Fig. 8—Above: Rib, welded to the shell, holding a large ring.

Fig. 7 — Left: Individual box welded to the shell or individual rib.

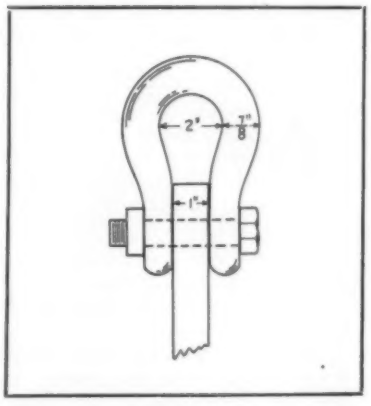


Fig. 9 — Right: Rib with shackle attachment.

Chain System Densities Some chain systems are arranged with a constant density throughout, and some have two or more distinct sections of different densities. The source or type of chain system has little effect on the number of sections of different density since the single *versus* multiple density systems were about equally divided in loop and curtain arrangements and also between manufactured and plant-designed systems in the installations observed.

Variations in density may be accomplished in several ways: (1) unequal spacing of suspension ribs, (2) differences in loop or curtain length, (3) multiple suspension from a single hanger, (4) variations in the number of hangers per suspension rib, and (5) different sizes, shapes, or weights of chains.

In instances where there are two sections of different densities, the less dense section usually is at the feed end to facilitate the entry of the slurry into the chains.

At plants where there are three sections, the feed end also is usually of a relatively low density to allow the slurry to enter. The center section, or that section where the slurry becomes sticky, is usually of low density in terms of feet of chain, but high density in terms of weight. Some operators feel that the concentration of chains, particularly extra weight, should be in this section to break up mud rings. Others prefer that this sticky section should be of low numerical chain density, to allow the slurry to pass through more rapidly and reduce mud ring formation. The discharge end of the chain systems with three sections is usually the most dense, to allow the greatest heat transfer where the maximum amount of heat is present.

Chain System Diameters It has been found that *increasing the diameter* of the chain-equipped kiln-section is helpful in eliminating mud rings. It is usually possible to increase this diameter by the removal of the lining in the chain system. There seems little possibility of damage to the shell, since it is covered by a layer of slurry and should suffer little from heat or abrasion. It is not known whether the removal of lining in the chain section helps break up mud rings by shell flexure, by changes in the gas velocity or in the surface exposed, because of decreases in chain section density, or for some other reason.

An interesting installation which provides additional features besides increased diameter is a slurry drier, which may be added to existing equipment. This drier may be installed above or beyond the kiln and connected with the kiln through a hood. The drier contains the chain system; in addition to the advantages available with a diameter different from that of the kiln, this system increases the effective length of the kiln without taxing existing facilities of drive, gears, foundation, and torsion on the shell.

Position of Chain System Most chain systems are placed so that there is an open space in the kiln at the feed end before the chain sections. This open space may range between 5 and 25 ft. and is provided for the purpose of facilitating the entry of the slurry into the chain system.

Another advantage, if dust is added to the slurry, is the additional mixing of the dust with the slurry before exposure to the kiln gases by the raising action of the chains. In only one case did the chains extend to the back end of the kiln, and this was because the equipment previously had been used for another process and alterations had not been made at the time of changeover to portland cement manufacture.

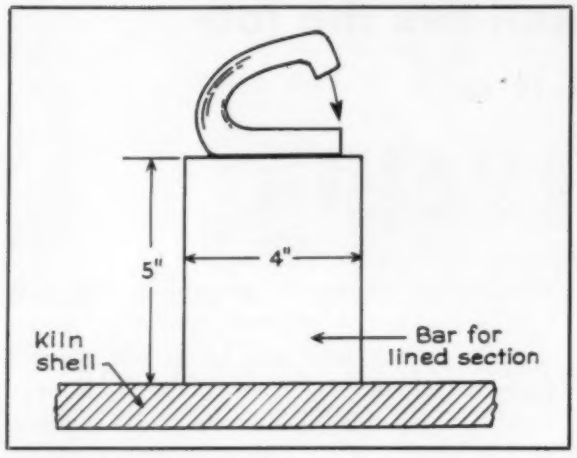


Fig. 10—Special end link welded to the shell or to an individual bar.

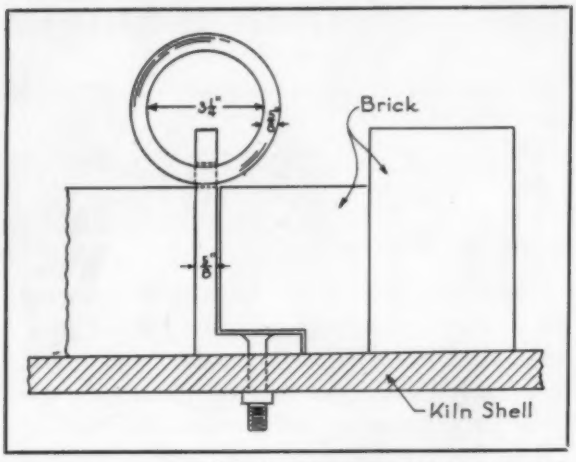


Fig. 11—L-shaped rib, bolted to the shell, holding a large ring.

Chain Suspension Chain suspension is primarily determined by maintenance and replacement. From this point of view the simplest type of suspension is a distinct advantage.

In kilns which have no lining in the chain sections, the end links are often welded directly to the shell. Sometimes the end link is welded to a rib or a channel extending out past the lining. A special open end link may be welded to the shell and then hammered shut after the chain is inserted. C-links are now being used for attaching chains to segments, etc., in many new installations.

Suspension ribs, spirals, V-shaped channels, segments, or boxes are welded or bolted to the shell. Loops or curtains are attached to the ribs and spirals by means of rings which pass through the rib or by means of an oversized end link which is bolted to the spiral. Individual boxes, welded to the shell, have an opening for insertion of the end link of the chain and a hole through the sides, so that a bolt may be pushed through the link.

Segments are channel-shaped, with lips, so that three bolts fastened under the lips will hold an equal number of yokes or spiders. The end links of each chain are fastened under the fingers of the yoke or spider, and the bolt is tightened to draw down the edges and hold the chains.

Chains are usually suspended in a manner to help convey the load through the system as discussed under Types or Classes of Chain Systems. In certain cases the direction of the loop was reversed to keep the load from passing too rapidly. Reverse arrangements are closely associated with systems of relatively low density.

Suspension equipment is shown in figures 5-11.

Chains and Links Standard brands of proof coil or hoisting chains are used in cement

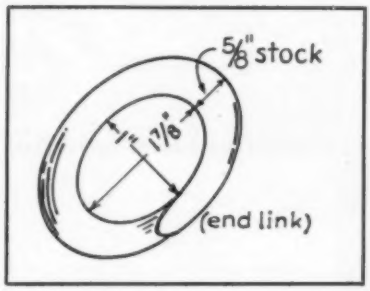


Fig. 12—5/8-in. link with overlap closure.

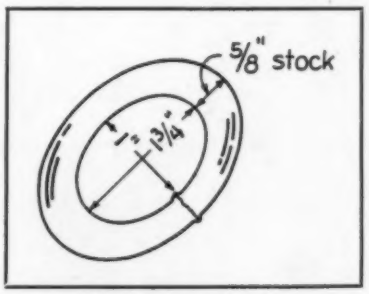


Fig. 13—5/8-in. link with welded closure.

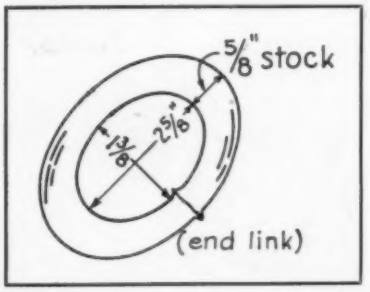


Fig. 14—5/8-in. link with welded closure.

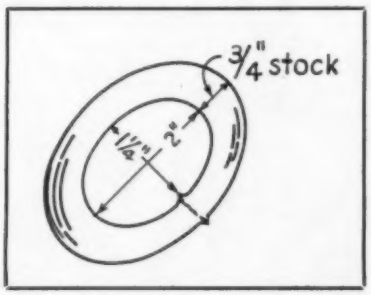


Fig. 15—3/4-in. link with welded closure.

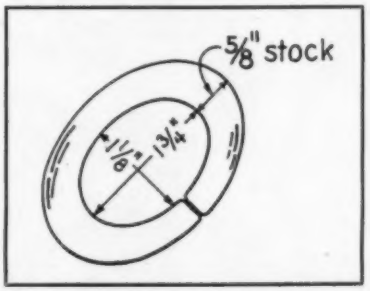


Fig. 16—5/8-in. link with butted closure.

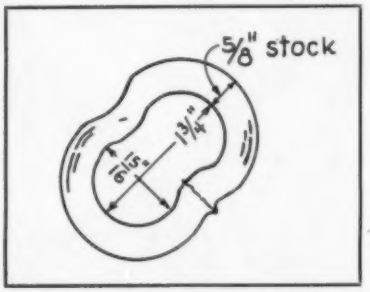


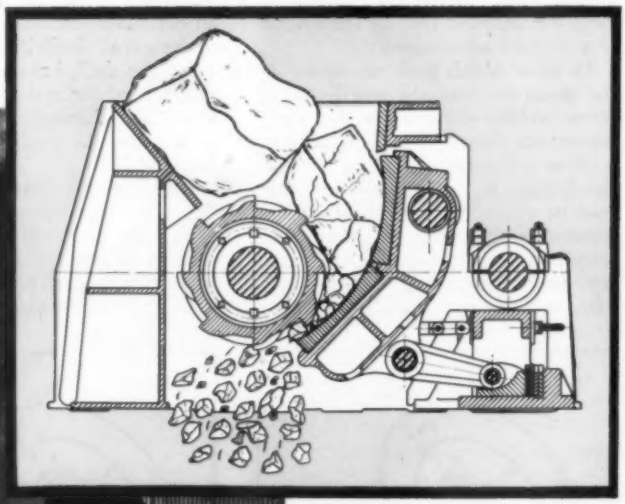
Fig. 17—Figure 8 link with welded closure.

When a Single Roll fits the job make it a

PENNSYLVANIA

If you think large single rolls have limitations on capacity and ratio of reduction you can probably stretch these if you'll use the Pennsylvania. It'll easily handle wet or frozen materials that plug jaws, gyratories and conventional hammermills, and requires much less head room. For instance, a 30″ x 60″ Pennsylvania Penn-Lehigh takes only half the head room needed for a gyratory of equal capacity. And there are certain exclusive features in the compact heavy duty Pennsylvania. There's the adjustable breaker plate with reversible and interchangeable wear liners; the roll shell is all in one piece—no segments with frozen bolts or renewable teeth to work loose. Some of these single rolls have been in use over 30 years and are still going strong, with a cost per ton that is negligible. Remember, there's only one Penn-Lehigh Single Roll and Pennsylvania makes it. Ask us for details and crushing counsel.

PENNSYLVANIA CRUSHER DIVISION
Bath Iron Works Corporation
West Chester, Penna.



PENNSYLVANIA
SINGLE ROLL CRUSHERS

PE-214

More Information, Please

Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.

ZIP-TOP is a new multiwall bag-opening device developed by *Arkell & Smiths*. When adapted to the standard A&S sewn valve or sewn open-mouth bag, Zip-Top permits easy opening with one sharp pull of the tab. The opening thus formed extends the full width of the bag to facilitate pouring. Detailed information is available. (1)

BULLETIN G-2, an index of instrumentation literature published by the *Industrial Division, Minneapolis-Honeywell Regulator Company,* covers product catalogs and bulletins, technical and industry bulletins, specification sheets, and instrumentation data sheets, and contains a complete index of *Instrumentation* magazine articles for the last 10 years. (2)

QUALITY WIRE SCREEN is the title of a new two-color, illustrated folder just released by the *Cleveland Wire Cloth and Manufacturing Company.* A brief history of the company is combined with partial cataloging of the most popular wire screen items. (3)

DRY GRINDING MILLS are featured in a catalog available from the *Hardinge Company, Inc.* Proper application and selection is discussed; various air classifying arrangements are described; and a number of plant flow sheets, specifications and performance data are also given. (4)

SAND MAKING AND CLASSIFYING BY AUTOMATION is explained in Bulletin No. 900 offered by *Meckum Engineering, Inc.* Fundamental principals under which the Meckum-Floatex sand making and classifying equipment functions are featured and a typical plant layout is shown. Tonnage and size specification sheets are also available (5)

RADIAMATIC PYROMETERS are described in Catalog C 93-1, available from the *Minneapolis-Honeywell Regulator Company.* These radiation temperature sensing elements measure the temperature of a heated object without contact. They are particularly useful in high temperature applications, such as rotary and continuous kilns. (6)

BRUNNER & LAY PRODUCTS are featured in Catalog No. 756 which includes drills, drill steels, tungsten carbide rok-bits, and drilling accessories. Pictures and specifications are given for each product, along with suggestions for obtaining the best results with Rok-Bits. (7)

HYDROSEAL AND CENTRISEAL PUMPS are described in Brochure No. 956 available from *The Allen-Sherman-Hoff Company.* Hydroseal slurry, sand, dredge and sump pumps operating with sealing liquid, and Centriseal slurry pumps which operate without sealing water are pictured and advantages of each are given. (8)

509 AND 510 MULTI-PURPOSE GEAR LUBRICANTS have been developed by *Lubrication Engineers* to offset problems of gear lubrication brought about by higher torque and pressure valves used in modern equipment. The new lubricants reportedly will reduce excessive wear of pinion and ring gears. Literature is available. (9)

BOOK 2577, a condensed catalog of the complete line of *Link-Belt Speeder Corporation's* shovel cranes, has just been released. The catalog gives descriptive information on more than 20 models, all convertible to any standard front-end attachment. (10)

THE NEW LINCOLNWELD SUBMERGED ARC WELDER is described in a bulletin offered by *The Lincoln Electric Company.* Features and illustrations of Lincolnweld models and Lincolnweld attachments are given. Lincoln power sources for use with Lincolnwelds are presented, in addition to a complete selection of electrodes and fluxes. (11)

THE MORSE FLEXIBLE CHAIN COUPLING CATALOG, newly-revised, is now offered by the *Morse Chain Company.* Specifications, dimensions, ratings, and applications are given on series DSC, series SA silent chain couplings, and series DRC roller chain couplings. (12)

NORDBERG'S COMPLETE LINE OF GRINDING MILLS is the subject of a 12-page bulletin just published by the *Nordberg Manufacturing Company.* Rod, ball, pebble, tube, and compartment type mills with grate, overflow, or peripheral discharge are described. (13)

DECO ORE DRESSING EQUIPMENT is described in *Denver Equipment Com-*

FIRST CLASS
PERMIT NO. 44
CHICAGO, ILL.

BUSINESS REPLY CARD

No Postage Stamp Necessary if mailed in the United States

THREE CENTS POSTAGE WILL BE PAID BY

Pit and Quarry Publications

431 South Dearborn Street

CHICAGO 5, ILL., U.S.A.

NOVEMBER, 1956

Please send more information on circled items described in this issue

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71									

In addition I would like information on:

_____

Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____

More Information, Please

Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.

pany's Bulletin G3-857. Mills, crushing rolls, crushers, screens, classifiers, pumps, agitators, thickeners, filters, and dryers are some of the equipment described and illustrated. (14)

MODEL SH AND MODEL XH VIBRATING SCREENS for handling feed up to 6 and 20 in. are described in a 24-page bulletin recently issued by the *Allis-Chalmers Manufacturing Company.* The bulletin also tells how to select a vibrating screen and provides general rules for cable suspended screens. (15)

A 16-PAGE GENERAL CATALOG covering the entire International Drott line of Skid-Shovels and attachments has just been released by the *International Harvester Company.* On-the-job photos show units utilizing the various attachments, and diagrams illustrate the latest improvements. (16)

44 TYPES OF ELECTRODES are covered in a new 28-page bulletin available from *Hobart Bros. Company.* The catalog gives application, procedures, recommended currents, physical properties, and sizes available for mild steel, iron powder, special alloys, hardsurfacing, aluminum, and bronze electrodes, in addition to many others. (17)

SIZE "41" SCRAPER FRAME HOIST, said to pull up to 9,900 lb., is the topic of a booklet just made available by the *Ingersoll-Rand Company.* Construction features are pointed out, and specifications and standard equipment are listed. (18)

CONVEYCO CONVEYOR SCALES, manufactured by *The Howe Scale Company,* weigh aggregate or other bulk materials in motion in a normal material handling process. Conveyco scales can be added to existing conveyors or inserted as a self-contained unit in present material handling flow. A descriptive brochure is available. (19)

TYPE CF FLANGE COUPLINGS for internal combustion engines are featured in Bulletin No. 606 offered by the *Lovejoy Flexible Coupling Company.* Proper couplings for various makes of engines under different application factors are suggested. (20)

HH AND HU "PAYLOADER" TRACTOR-SHOVELS, two new four-wheel models introduced by *The Frank G. Hough Company,* are illustrated in pamphlets listing their features, advantages, and specifications. (21)

A TORQUE CONVERTER FLUID containing a new lubricating oil additive and a new high-temperature oxidization inhibitor has been announced by the *D-A Lubricant Company, Inc.* Designated D-A Torque Fluid, it is said to eliminate seal shrinkage and hardening and reduce varnish deposits. (22)

HOSE CLAMPS, LOCKING TOOLS, FITTINGS, and accessories are included in a condensed catalog available from the *Punch-Lok Company.* Also illustrated and described is a Clamp-Master Kit which contains 45 assorted standard clamps for clamping applications from ½ in. to 10 in. in diameter, and a P-38 Loking Tool. (23)

TURBOPOWER DIESELS are discussed in the latest brochure offered by the *Detroit Diesel Engine Division, General Motors Corporation.* Industrial and marine models ranging from 159 to 300 brake horsepower are described. (24)

BULLETIN 106, issued by *The Alpha Molykote Corporation,* describes a new testing machine for lubricants, the Model LFW-1. The equipment is pictured and its operation is diagramatically visualized. Specifications are included. (25)

THE TRANSVERTER POWER TRAIN PACKAGE designed by the *Transmission Division of the Clark Equipment Company,* is illustrated in an 8-page, fold-out bulletin. The bulletin emphasizes the features of the unit, and includes a cut-away diagram of the assembled unit, specifications, and dimensions. (26)

BIN-VUE, a level indicator for bins, cyclones, conveyors, chutes, etc., is presented in a folder available from the manufacturer, *Convair.* Four models, the standard, heavy-duty, explosion-proof, and high-temperature, are illustrated with photos, diagrams, and text. (27)

SUPER-CLEANING ORDINARY ATMOSPHERIC AIR by means of specially-adapted industrial cloth-filter-type dust collection is treated in a bulletin published by the *Wheelabrator Corporation.* Applications include the cleaning of cooling air for enclosures in which heat-generating electrical equipment is located, and the ventilation of laboratories requiring dust-free atmospheres. (28)

NOVEMBER, 1956

Please send more information on circled items described in this issue

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71									

In addition I would like information on:

_____

Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____

FIRST CLASS
PERMIT NO. 44
CHICAGO, ILL.

BUSINESS REPLY CARD

No Postage Stamp Necessary if mailed in the United States

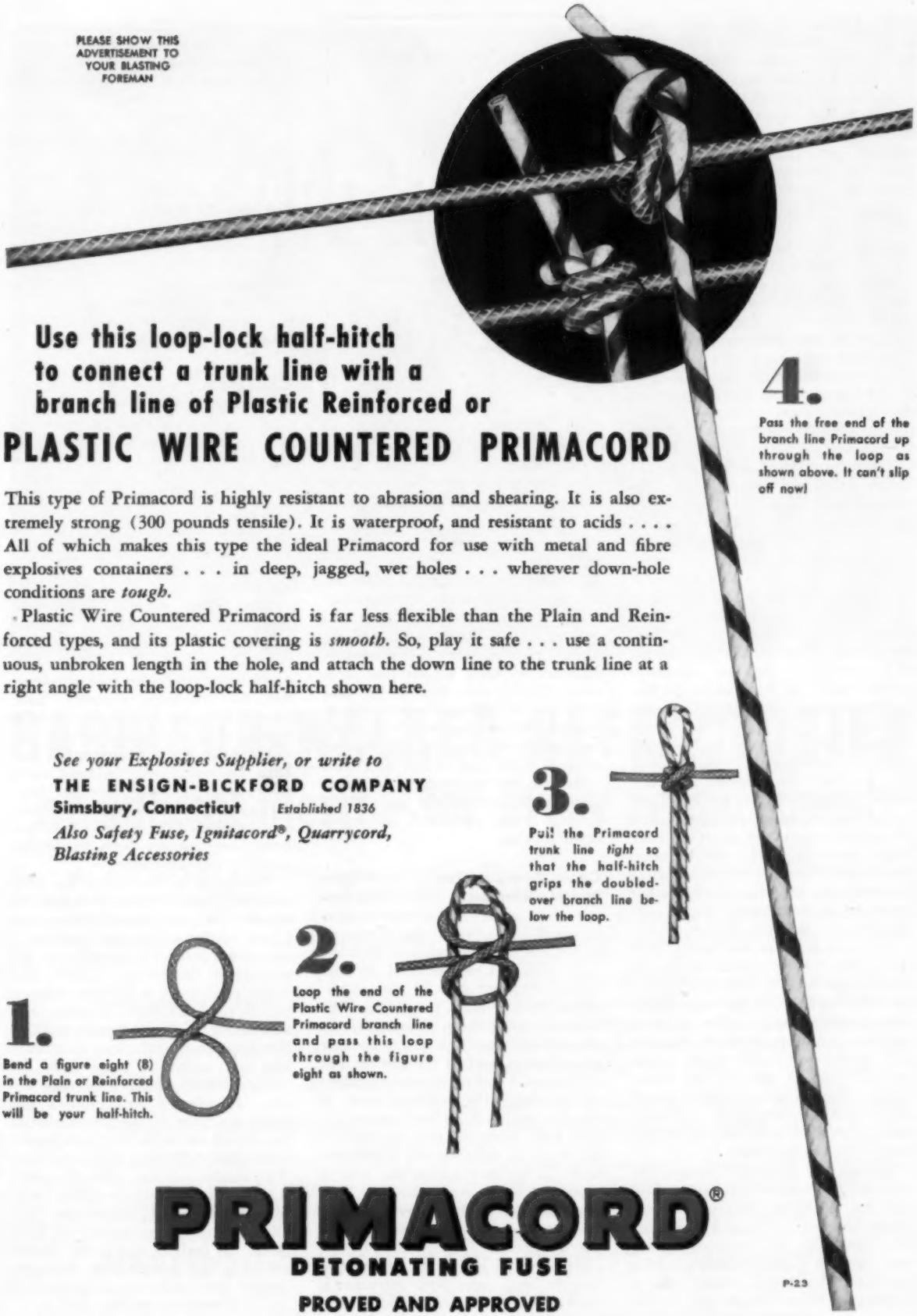
THREE CENTS POSTAGE WILL BE PAID BY

Pit and Quarry Publications

431 South Dearborn Street

CHICAGO 5, ILL., U.S.A.

PLEASE SHOW THIS ADVERTISEMENT TO YOUR BLASTING FOREMAN



Use this loop-lock half-hitch to connect a trunk line with a branch line of Plastic Reinforced or

PLASTIC WIRE COUNTERED PRIMACORD

This type of Primacord is highly resistant to abrasion and shearing. It is also extremely strong (300 pounds tensile). It is waterproof, and resistant to acids . . . . All of which makes this type the ideal Primacord for use with metal and fibre explosives containers . . . in deep, jagged, wet holes . . . wherever down-hole conditions are *tough*.

Plastic Wire Countered Primacord is far less flexible than the Plain and Reinforced types, and its plastic covering is *smooth*. So, play it safe . . . use a continuous, unbroken length in the hole, and attach the down line to the trunk line at a right angle with the loop-lock half-hitch shown here.

See your Explosives Supplier, or write to
THE ENSIGN-BICKFORD COMPANY
Simsbury, Connecticut *Established 1836*
Also Safety Fuse, Ignitacord®, Quarrycord, Blasting Accessories

1. Bend a figure eight (8) in the Plain or Reinforced Primacord trunk line. This will be your half-hitch.

2. Loop the end of the Plastic Wire Countered Primacord branch line and pass this loop through the figure eight as shown.

3. Pull the Primacord trunk line *tight* so that the half-hitch grips the doubled-over branch line below the loop.

4. Pass the free end of the branch line Primacord up through the loop as shown above. It can't slip off now!

PRIMACORD®
DETONATING FUSE
PROVED AND APPROVED

P-23

kilns. Chains of ⅝-in. stock are usually recommended by manufacturers of chain systems; however, ¾- and even 1-in. chains have been installed in several plants in curtain or plant-installed loop systems, and one chain system manufacturer now also supplies ¾-in. chain. About 77 percent of the systems reported are composed of ⅝-in. link chains.

Lengths of curtain chains are chosen which will allow an open space or tunnel below the freely suspended chains of about one-fourth or one-third of the kiln diameter. In the loop system the chain lengths are usually between 90 degrees and 135 degrees of the kiln circumference. Curtains lengths range from one-half to three-fourths of the kiln diameter. Because of the usual lesser density in this type of system the tunnel for the passage of slurry and gases is of less significance.

The links of the chain are predominantly elliptical in shape except for one patented figure 8 link, which is said to increase the weight 10 to 15 percent over an elliptical link of the same stock and equal outside dimensions. In some places circular links are used because it is felt that each link may rotate at times so that wear is more evenly distributed, and longer life results. The outside dimensions of a new ⅝-in. link are approximately 2¼ in. by 3 in., while the ¾-in. link has dimensions of 2⅝ in. and 3½ in.

Chain links are closed in three ways: (1) welding, (2) overlap, and (3) butting. In general, overlap closing is used only for the end link, to facilitate replacement. Most loops or curtains are made up of welded links; however, links which have been butted but not welded are used in some places, with good results. Examples of several sizes, shapes, and closures are shown in figures 12-19.

The surface areas of elliptical link chains have been calculated to be approximately 15.6 and 13.0 sq. ft. per 100 lb. for the ⅝- and ¾-in. chains, respectively. The surface areas per unit length would then be 0.65 sq. ft. per ft. for ⅝-in. chain and 0.79 sq. ft. per ft. for ¾-in. chain. The surfaces of the figure 8 chain in the ⅝- and ¾-in. sizes have been calculated to be about 10 percent higher in each case.

Chains are available from many sources and vary considerably. Weights of ⅝-in. elliptical chains range between 3.85 and 4.50 lb. per ft., 3.85 being the most commonly used at the plants visited for this project. The ¾-in. chains have a range of 5.80 to 6.25 lb. per ft., the 6.25-lb. chain being most widely used.

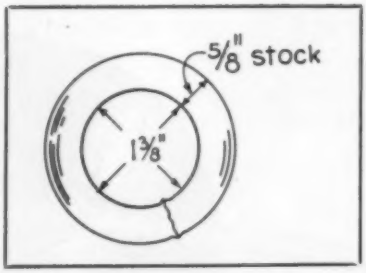


Fig. 18 — ⅝-in. circular link with welded closure.

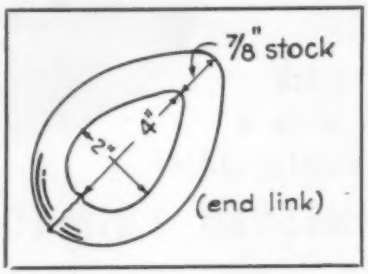


Fig. 19—Pear-shaped link with welded closure.

Total weight and area of chain are so closely allied with the materials and operation that only the limits noted from the plants visited will be mentioned here. For curtain systems, extremes of total weight and area were 22,437 and 84,652 lb. and 2,925 and 10,390 sq. ft. Among loop systems, the weights and areas were between 24,192 and 112,590 lb. and between 4,150 and 15,950 sq. ft. In each case the maximum and minimum areas were in the same chain systems as the maximum and minimum weights.

Chain Consumption and Maintenance In both types of chain systems the wear is usually greater at the discharge end of the system because of abrasion and oxidation, accelerated by the higher temperatures. In the curtain system it has been found that the loose end of a chain wears faster in the wet section of the system because of corrosion, and in the dry section the fastened end wears faster because of abrasion. The heaviest wear in the dry section is on the first or second link, while in the wet section the wear on the free end is progressive. In the loop system the wear is most noticeable in the first few links near the shell in the dry end and the first one-third of attached ends in the wet section.

In most plants when one or two lengths break loose, little attention is paid unless the chains tangle to form an obstruction. Chains are replaced when the kiln is shut down for lining or for mud ring removal if enough chains have been lost to affect the efficiency of the system.

Sometimes wear on the contact points of the links is enough to cause the loop or curtain to become excessively long and to narrow the tunnel. In this case the loops or curtains are shortened by the removal of several links, if the chains do not require replacement. The replacement of individual chains in a loop system is considerably more difficult than in a curtain system, because of the necessity for proper threading or weaving between adjacent loops.

Changes in Equipment Most chain systems have been altered or changed in some respect subsequent to installation. Of the plants reporting, 76 percent have made changes. In fact, chain system manufacturers install systems with provisions for alteration. Currently, systems are installed with the minimum overall length and with extra ribs or hangers, should extension prove necessary.

Most older systems have been shortened as a result of modern methods of operation. Larger or faster operating fans, which supply a greater draft in higher fuel consumption for increased capacity, have caused the lower end of many chain systems to be damaged, frequently by excess heat or, more correctly perhaps, by oxidation. In most cases these lower sections have not been replaced, and a shorter chain system has resulted. Lengthened chain systems have usually been made less dense at the same time.

Formation of mud rings has been another primary cause for changes in density. As mentioned before, the kiln diameter in the chain section is sometimes increased, usually by the removal of the lining. In mud ring areas, chains are sometimes thinned by clipping alternate lengths, thus decreasing the length density to allow the slurry to pass through more rapidly and easily. In some cases the weight density in the mud ring section is increased to eliminate this problem, either by the installation of heavier chains or by the attachment of weights to the end of the curtains. The weights on the ends of curtain lengths may be large steel balls (4-in. diameter or more) or oversize links (8-in. diameter or more) of large stock. In both instances the desired effect is the same. The increased weight on a chain length is expected

(*Continued on page* 134)

HARBISON-WALKER REFRACTORIES
of special merit—for every requirement

Select the best for each particular purpose from the full complement of types and classes of refractories which are especially suited for the various conditions involved in the many different rotary kiln operations.

Brands With Long Service Records

Basic Refractories for High Temperature Zones of Rotary Cement Kilns

MAGNECON—THERMAG—MAGNEX

Leading High-Alumina Brands

ALUSITE 70% Alumina
ANCHOR 60% Alumina
CORALITE 80% Alumina

LOTHERM—The high strength insulating brick specifically developed for use in the preheating zones of rotary cement kilns, provides durable insulating linings for direct exposure to the prevailing kiln conditions.

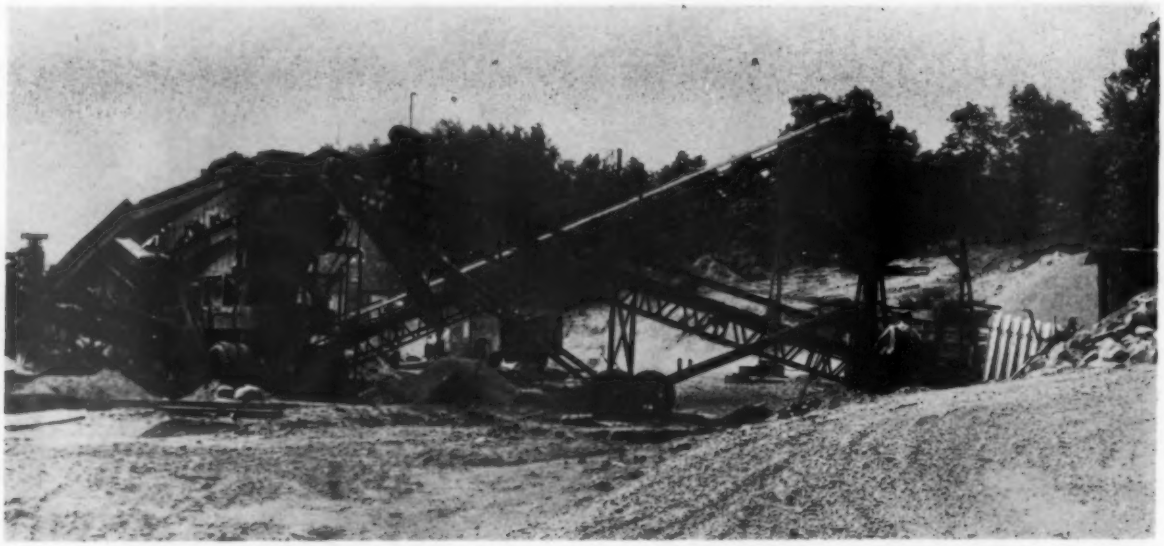
Various high duty and super-duty fireclay brick brands of superior quality are available from plants which afford lowest transportation costs—Pennsylvania—Missouri—Ohio—Alabama—Texas—Kentucky—Maryland.

—and the outstanding abrasion resistant refractories—DURO and WYLAM A.

—as well as all classes of Plastic Fire Brick, Castables, Mortars and Cements and Insulating Refractories.

HARBISON-WALKER REFRACTORIES COMPANY
AND SUBSIDIARIES

World's Most Complete Refractories Service **General Offices, Pittsburgh 22, Pennsylvania**



The real heart of the Gooding plant near Manchester, Mich., is this portable crushing-and-screening unit which was set in to separate the pit-run material. Flexibility in this unit made it possible to pull several sizes of all-crushed material while doing a screen job on the remaining fraction.

Portable Gravel Plant Complete With Washing Units!

mobility of portable plant retained despite specifications requiring scrubbing units

A MICHIGAN gravel contractor, O. E. Gooding & Company of Ypsilanti, has successfully demonstrated something different in rock production: a portable rock plant with washing facilities.

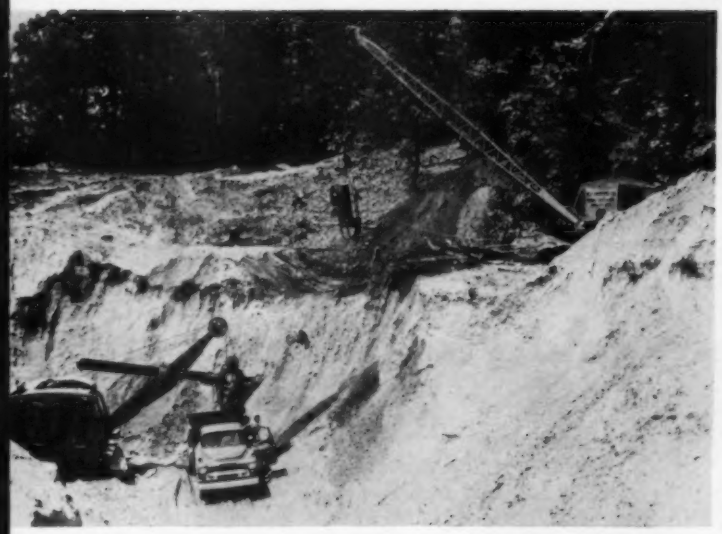
Set up in Gooding's 150-acre pit deposit 3 miles north of Manchester, Mich., the plant has made history of a sort in that region by turning out simultaneously four sizes of material, three of them washed. In a pinch, Jerry Gooding, plant superintendent, believes, he could turn out five sizes simultaneously with the setup which meets state, county, and industrial specifications for more than ten types and sizes of material needed in construction work.

The Gooding company purchased a Pioneer 46-VE crushing and screening plant, using it as the heart of an installation which included washing facilities. Feeding raw material from the pit directly to the bottom-deck of the screen of the Pioneer 46-VE results in dropping everything needed for the washing plant through this first screening. Oversize rock retained on this bottom deck then is routed through a 10- by 36-in. Pioneer jaw crusher and 40- by 22-in. rolls arranged in closed circuit with the upper and middle screen decks to produce ⅝-in. minus rock chips. These chips are a premium product, commanding a ready market at a good price throughout that area. Other sizes of material passed through the washing plant and graded on a secondary set of vibrating screens bring commensurately lower prices.

The pit is in a glacial moraine deposit, and consists of well-graded sand and gravel ranging up to and including cobbles about 12 in. in diameter. The pit also has some clay pockets typical of glacial moraines, which tend to present operating difficulties unless they are dug out and wasted by excavating machinery at the head of the line.

The Pioneer 46-VE and washing units represent something which the Gooding firm has been working toward since it bought its first Pioneer equipment—a Pioneer 40-V—which is still giving excellent service at another setup near Hudson, Mich. The huskier 46-VE, with its bigger spread of plant components, its desirable versatility, and a longer reach on its conveyor belts, was the natural plant to use in the heart of the new setup. According to Jerry Gooding, the plant has allowed the company to expand its market among state, county, industrial, and contractor users of crushed rock in the area, including several commercial concrete plant installations which buy sand from this setup.

Pea gravel turned out by the plant



Above: Two machines at work in the pit, the dragline removing overburden, the shovel loading trucks for the plant.

Above, right: Jerry Gooding (left), general plant superintendent, with a veteran employee, R. D. Maidens, who picks debris and roots off the 30-in. input belt near the tunnel.

Right: By using a side chute on the portable plant, an extra size of crushed material is taken out of the line to produce crushed stone chips for highway work.

is used in concrete block manufacture, in road building, and for other precast items of concrete. Rock chips, 100 percent crushed, are used with asphalt for the bituminous armor decking of highways throughout southern Michigan. The Gooding firm even supplied some material for the construction of the Ohio Turnpike in the northern part of that neighboring state.

When this article was being prepared, Gooding was turning out four sizes of material simultaneously from the plant. Dry, 100 percent crushed rock chips of ⅝-in. minus size were being pulled from the middle deck of the 46-VE plant and routed directly over a conveyor to a 25-ton surge bin, where trucks could pick up the material and haul it away. Clean, washed sand, pea gravel, and round ¾- to ⅜-in. gravel were being made at the washing plant from raw material which passed through the bottom deck of the 46-VE plant in its first pass through that unit. The setup was arranged so that any or all sizes of material could be stored readily, if necessary.

The plant had been arranged in conventional form, with power for the 46-VE unit supplied by a General Motors 6-C110 diesel engine. This diesel was hooked to the plant by a flat-belt drive, and an extension on its drive shaft also drove a diesel-electric generating set which supplied electricity to the various motors on the 46-VE. Auxiliary power for the motors on the washing side of the plant was brought in over transmission towers from a local utility company.

Raw pit-run material, excavated from the large tract of land which the Gooding firm owns north of Manchester, is excavated either by a power shovel or a dragline. As a general rule, the shovel does the truck loading, and the dragline, working from above, strips overburden and removes objectionable pockets of clay and organic material. This pit-run product is hauled to the feeder trap by three Ford dump trucks.

The arrangement of the feeder trap is unique and also highly efficient. Gooding took a Pioneer 24-in. reciprocating plate-type feeder and stuck it through the top of an 84-in. Armco Multi Plate culvert pipe, which formed the feeder tunnel. Above this plate feeder, a steel surge hopper was mounted, capable of holding two full truckloads of material. The trucks simply drive up a haul road to a back-in point near the feeder trap, back up a few feet, and dump the raw material over the feeder.

The material moves up to the plant over a 30-in. Pioneer feeder conveyor, which is arranged well out in the open, so that one man stationed alongside can toss away any roots, oversize boulders, or other objectionable material. Entering the plant, the pit-run material is fed directly to the bottom deck of a 4- by 12-ft. screen, equipped with a 1½-in. perforated plate-type screen. This bottom-deck feed permits all the native pit-run material (sand, pea gravel, and ¾-in. minus sizing requirements) to drop directly through and get out of the way. This

Lined . . . and relined with Lorain . . .

Primary clinker mill grinds 37,873,000 bbls. of feed efficiently and economically

At Hudson, New York, the Universal Atlas Cement Company has been using USS Lorain Rolled Steel Plate Linings in its grinding mills since 1938. One 10′ - 6″ x 12′ Preliminator alone has ground 37,873,000 barrels of clinker up to February 13, 1956, consuming only two sets of linings and lift bars.

The first lining in this mill was made of 2″ liner plates and lift bars, Section M-3714, designed to permit replacement of bars during life of the lining. In grinding the 38 million barrels of clinker, one lining and one set of renewal bars were completely worn out. But despite the tremendous tonnage processed, the second lining installed was still in serviceable condition when the mill went down for general repairs in February.

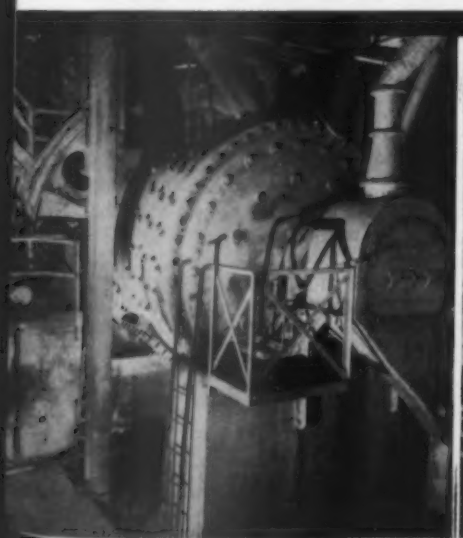
HEAVIER-DUTY LINING—The performance of the original Lorain linings was so impressive that management at Universal Atlas decided to install the latest type Lorain lining with deep recessed liner plates and extra-heavy lift bars, Section M-4497, to further increase the mill's grinding efficiency and to eliminate the need for replacing lift bars. The new type lining was installed during the repair period in February so production would not be interrupted during the peak season this summer. Frankly, no shutdown due to lining problems is expected for the next several years.

LONGER LIFE . . . CONSTANT LIFT—USS Lorain Rolled Plate Linings are made of tough, rolled steel that means longer grinding life. Lift bars are rolled alloy steel, heat treated to obtain a hardness differential that will maintain lift height throughout life of the lining, thus providing maximum grinding efficiency. Each Lorain Lining is tailor-made to fit a particular mill. The linings fit snugly—shell wash is eliminated. Mr. A. E. Glasspool, Maintenance Supervisor at Hudson, said "Lorain Linings are designed right and they fit tight. Each piece was properly marked, so we had no trouble with installation."

These heavy-duty linings installed by Universal Atlas will provide effective grinding action without fear of broken bolts, cracked plates or bars, and will continue to perform efficiently until the plates wear paper-thin.

WE'RE GLAD TO HELP—If you are not aware of the merits of USS Lorain Rolled Plate Linings and are not using them—if you are experiencing lining difficulties of any nature, we will be glad to have a sales representative call on you. Just write to: United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.

This 10′-6″ x 12′ Preliminator mill in Universal Atlas Cement's Hudson, New York, plant has ground 37,873,000 bbls. of clinker at a rate of 360 bbls. per hour.



The specially designed bolts will hold the Lorain Lining snug and tight for the life of the lining without fear of breaking. Lorain Linings are made of tough, rolled steel that is tailor-made to accurate shapes.

Although there was still some life left in the old lining, management decided to install the heaviest-duty Lorain Rolled Plate Lining for even greater grinding efficiency, and to assure continuous operation for several years to come.

These new, heavy-duty lift bars, Section M-4497, and 2-inch-thick liner plates are expected to increase mill efficiency. This lining will retain lift for millions of tons. USS Lorain Rolled Plate Lining successfully grinds until plates are worn paper-thin. USS Lorain-designed special manholes and covers were also an unusual feature of this installation.

UNITED STATES STEEL CORPORATION, PITTSBURGH • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS LORAIN ROLLED PLATE LININGS *and* USS GRINDING BALLS

UNITED STATES STEEL USS

Washing components in this end of the plant, completely portable, made it possible for the setup to turn out clean, washed rock in several sizes to meet rigid state specifications for that material.

through product then passes over a 30-in. conveyor run direct to the washing plant.

Feeding into the washing plant, the conveyor belt, full of material, dumps the rock first over a high-pressure water jet supplied by a high-pressure pump from a deep well which was dug on the property. The spray bar at this point washes the incoming material thoroughly and leaves it in a flowing state as it moves down the chute. This chute dumps the material to a triple-deck 4- by 14-in. Pioneer vibrating screen, of which two decks are used—the bottom and the middle. Each of these decks is equipped with 8- and 6-ft. screens. The top deck of this vibrating screen also is equipped with a high-pressure water jet which gives the material a further washing as it moves down the slope.

After being sized, the ¾-in. minus material, already well cleaned by the water jets, is dropped out a side spout to a conveyor which leads up to a storage bin. The pea gravel and sand fractions both are routed into screw-type scrubbers, where the rock is finally cleaned of all decantable material. Sand and the other rock size coming out of this washer pass by conveyor belt to storage piles. Since the sand fraction is sizable, the sand washer is equipped with a double-screw arrangement, and the storage pile of this material is quite large.

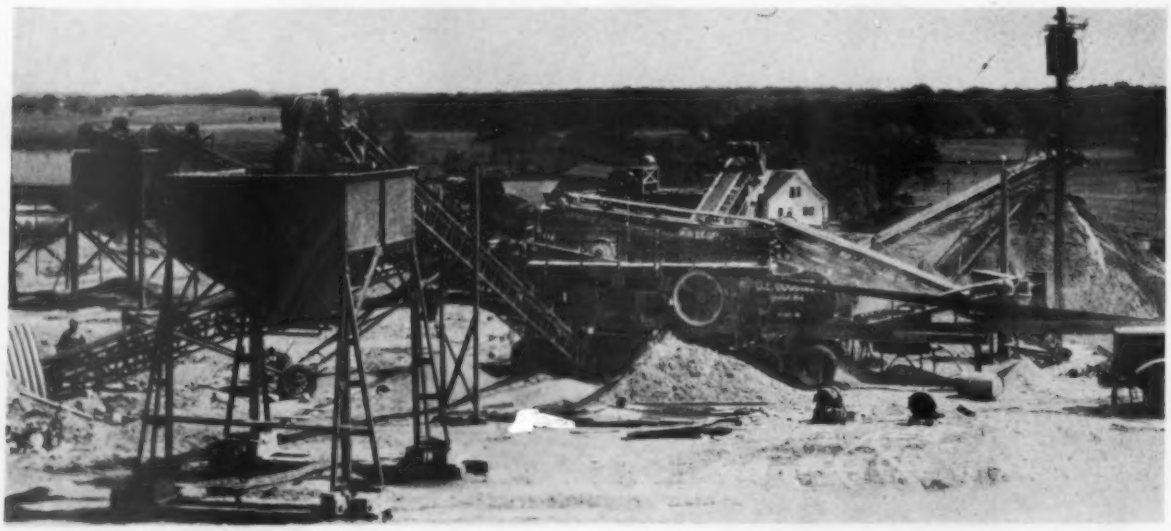
Arrangements have been made for secondary storage of the material at another location in the pit, if and when that is necessary. The remaining fraction retained in the 46-VE plant is used in the production of an all-crushed product. Material retained on the bottom deck of the screen is routed by the stock Pioneer routing system in that unit to a 10- by 36-in. jaw crusher and then to a set of 40- by 22-in. roll crushers, both arranged in closed circuit with the top and middle screen decks. Material retained on the top deck continues to route itself through the crushers until it meets sizing requirements. Material retained on the middle deck simply emerges through a side opening and is sent by a stacker conveyor to a storage bin.

On days when the pit is running fairly heavy in larger rock, it is possible to take out about 300 tons of chips from this surge bin. Superintendent Gooding for one would be considerably happier if his glacier pit deposit contained a higher percentage of cobbles in the 3- to 5-in. range, so that more of this high-priced product could be produced.

According to Mr. Gooding, several features of the plant lend themselves beautifully toward the solution of his special problems. The size and capacity of the 46-VE plant is such that it permits his ¾-cu. yd. shovel and dump trucks to operate at their capacity. Rapidly changing pit conditions, typical of glacial moraine deposits, can be compensated for swiftly, simply by changing the setting of the jaw or roll crushers, even while the equipment is running.

This plant is working five 10-hour shifts per week, and is turning out about 175 t.p.h. in the process. On that basis, the firm is doing a great deal of good in serving the rock user market through southern Michigan.

This general view taken from a knoll above the plant shows its general layout.



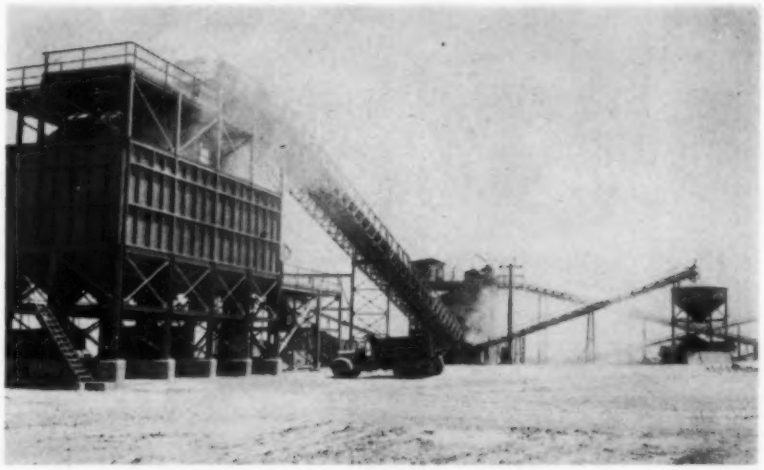
Another ON THE SPOT Report

New 300-T.P.H. Desert Operation Replaces Old Hartman Plant

WATER is a precious commodity in most areas of southern California and the 500-g.p.m. requirement for washing the sand and gravel at the fine new San Emideo plant of Hartman Con-

By HARRY F. UTLEY

crete Materials Company of Bakersfield is, of course, carefully conserved. By ponding in a series of settling pools, at least half of the dirty water is reclaimed and clarified for re-use. The central source is a gunited storage reservoir of 200,000-gal. capacity where fresh and pond waters are blended before being pumped up to the screens and classifiers. The supply is the 2,000-ft. deep casing of an abandoned oil well on the premises. Water is pumped from the 575-ft. level by a Peerless pump and piped a distance of 3,000 ft. to the make-up reservoir near the processing plant.



A general view of the Hartman Concrete Materials Company's new plant. Twin conveyors carry the crushed and uncrushed materials separately from the crushing tower (background).

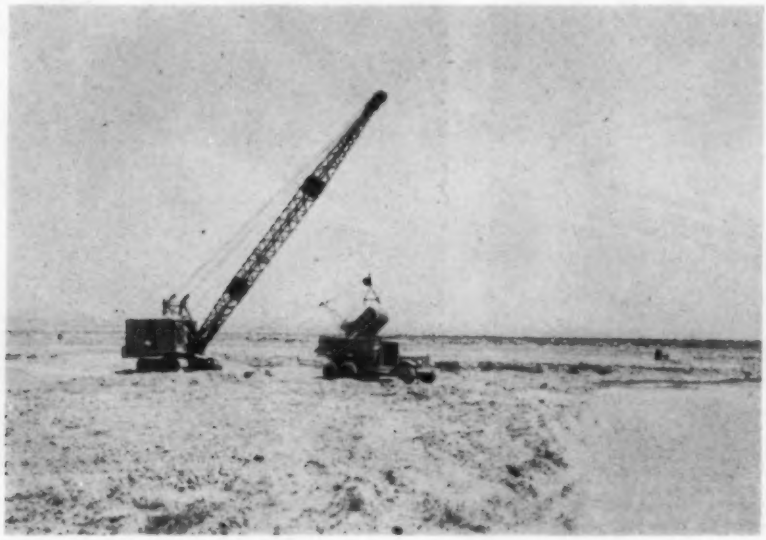
The new 300-t.p.h. plant, situated on the old San Emideo Ranch, lies about 32 miles southwest of downtown Bakersfield, where the company has 2 square miles of deposits under lease. The new operation, which replaces an old plant on the property, was designed and fabricated by the Conveyor Company, Los Angeles, and went into operation in April, 1956.

A Northwest 1½-yd. dragline excavates and loads the trucks in the pit. Initially, end-dump units are discharging from an earthen ramp to the 100-ton plant hopper; but at an early date, steel drive-over tracks will be installed to span the hopper, so that bottom-dump trucks can be used. The material is relatively clean in occurrence and contains little clay or other colloids. Gradation is good except for a slight over-occurrence of fines.

From the hopper, a Conveyco 42- by 8-ft. reciprocating feeder directs the pit-run over a 5-in. sloping grizzly at the tail end of the 36-in. main belt conveyor. Rejects pass to a 42- by 27-in. Kue-Ken Simplex jaw crusher set to break at 4½ in. Primary crusher power requirements are exceptionally low, the 75-hp. motor handling the load with ease.

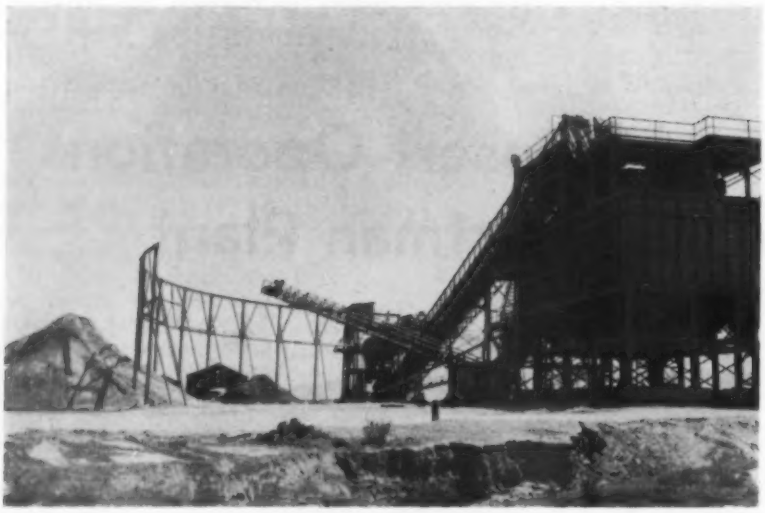
The conveyor delivers to the top of the crushing plant, where an Allis-Chalmers Ripl-Flo 4- by 12-ft. dry screen carrying 4½-, 3- and 1½-in. openings on its three decks splits up the supply four ways for processing. All top-deck rejects go to a 30- by 15-in. Kue-Ken Simplex jaw crusher set at 2½-in.; middle-deck rejects are chuted to a 3-ft. Symons coarse bowl cone crusher set at 1 in. The 1½- to 3-in. gravel retained on the lower deck is reduced to minus ⅝-in. by a Symons fine-bowl cone crusher.

Minus 1½-in. gravel and sand



A dragline fitted with a bucket loads an end-dump truck in the pit.

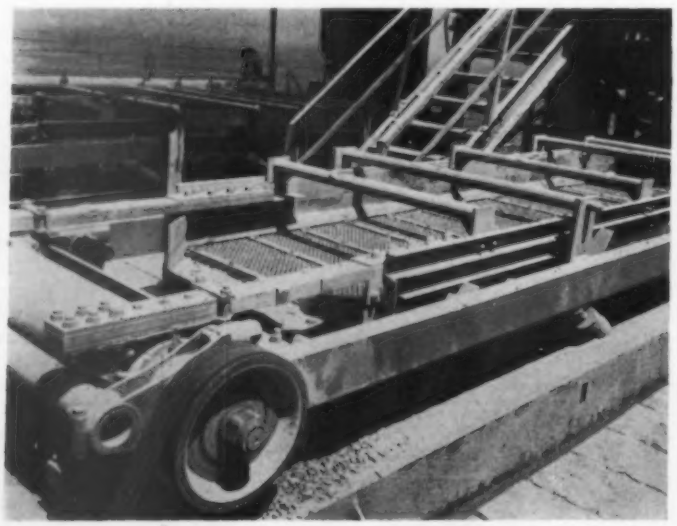
Two of the three secondary crushers in the new plant. Each one handles a specific top-size material for efficient and high production.



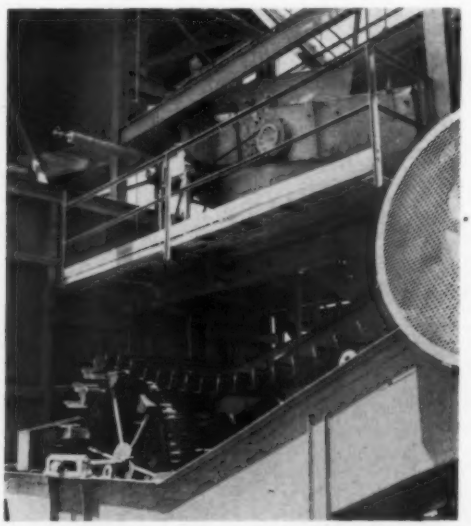
Another view of the washing-and-sizing plant and the sand stacker (left).

passing the Ripl-Flo screen is run over a Symons rod-deck screen, where the minus No. 4 sand can be split to "waste" or "save" in any proportion, depending upon the market demand or the gradation of raw supply. Waste sand is conveyed to a truck-loading bin for disposal, and saved sand is later washed and classified. It is combined with the 1½-in. to No. 4 gravel rejects from the rod-deck screen to provide the feed for washed and sized product at the rate of about 175 t.p.h.

Returning to the three secondary crushers, all the crushed product is combined and conveyed to a 3- by 10-ft. Symons screen located at a point alongside the main conveyor leading from the feed hopper to the crushing plant. This screen can take out some or all of the minus ¾-in. crushed material for road-base highway work, or it may merely serve as a transfer station, closing the circuit and allowing the crushed gravel to rejoin the pit-run coming up on the conveyor. Any split or proportion may be established at this screen. The normal operation when concrete aggregates constitute the entire production, however, is to transfer by conveyor to a Ripl-Flo screen which can take out any size larger than ¾-in. for further reduction in the cones. Or all the product excepting any plus 3-in. retained on the top deck can go by inclined belt-conveyor to the final-sizing plant, a separate structure mounted above the finished-material truck-loading bins. Capacity movement of crushed material to the sizing screens is about 125 t.p.h.



The sizing screen in the foreground operates dry and classifies only crushed material. The one in the background carries sprays to wash the natural gravels.



The sand drag, with the sand screen above. The buckets on the drag pulley aid turbulence.

This view from the sizing tower shows the waste-sand bin and the concrete-enclosed primary crusher station.

Spray-equipped screens for the washed gravel and dry-operated screens for the crushed product are arranged in series in the washing-and-sizing plant. All sizing is done over Symons horizontally-mounted units with the exception of a Ripl-Flo sand screen.

The 42-in. by 14-ft. double-deck crushed gravel screens make four finished products: —1½′ + 1 in.; 1′ + ½-in.; —½′ + ⅛-in.; and dust (—⅛-in.). These are stored in four of the seven 150-ton conical-bottom steel truck-loading bins.

The 42-in. by 12-ft. and 42-in. by 14-ft. washing screens make three natural gravel products: —1½′ + 1⅜-in.; —1⅜′ + 7/16-in.; and —½-in. plus No. 4. The minus No. 4 sand is taken out and fractions balanced or wasted to conform to specifications by a Ripl-Flo screen carrying No. 8 and No. 16 mesh cloth. The proportioned sand is then processed by a Conveyco sand drag, fitted with buckets, on the larger-diameter lower sprocket-pulley to increase turbulence in the tub. All the sand is stockpiled for drainage in a kidney-shaped ground-storage pile. The latter is built up by a radial stacker belt, its head-pulley end operating on a wide-arc overhead track.

The entire plant is of steel and concrete construction for permanence and fire-safety; it was also designed for resistance to seismic movement. The Raybestos-Manhattan conveyor belting travels on Conveyco troughing rolls and idlers. Link-Belt deflector nozzles are used on the washing screens.

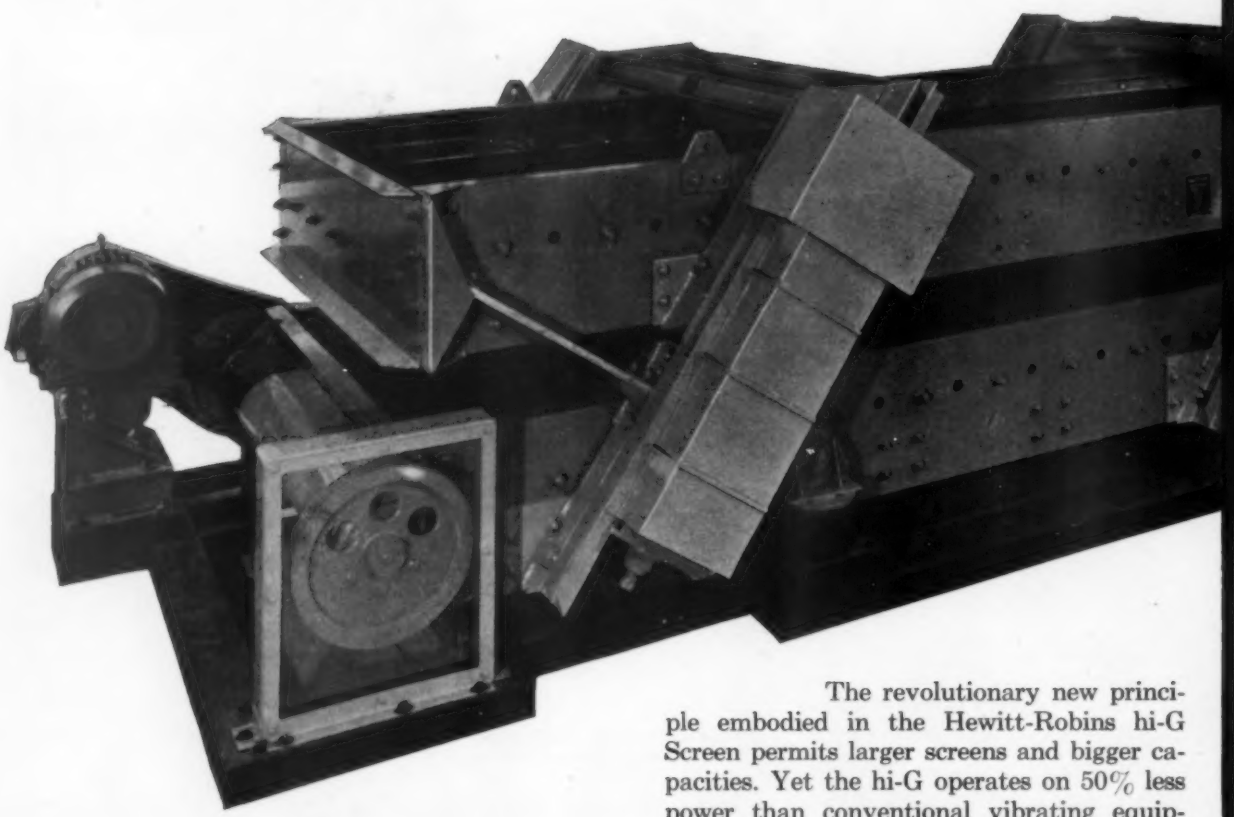
The new San Emideo plant is the latest step in the expansion of Hartman Concrete Materials. The present management, headed by Harold K. Fox, president, acquired the concern about 10 years ago, when it was still a relatively small factor in the production and supply of aggregates and concrete in Bakersfield and surrounding communities. Today, in addition to the San Emideo facility, the company has rock and sand plants in Bakersfield and Cuyama, ready-mix batching plants in Bakersfield, Oildale, Taft, and Maricopa. It operates a large fleet of late-model delivery trucks, trailers, and transit mixers. W. J. Fogle is superintendent of the aggregate plants.

The secondary crushing tower, where the product of the primary crushers is processed at about 125 t.p.h. The control house is at the top of the structure.

In another direction one sees the radial sand-stockpile and the 200,000-gal. water reservoir (background).

HEWITT-ROBINS *hi G* SCREENS

50 Per cent Savings



The revolutionary new principle embodied in the Hewitt-Robins hi-G Screen permits larger screens and bigger capacities. Yet the hi-G operates on 50% less power than conventional vibrating equipment! Even screens as large as 6' wide by 28' long require no more than a 20-HP drive.

Featuring an unusually sharp screening action, and a choice of stroke and speed combinations, the hi-G can be made in larger sizes than any other vibrating screen on the market.

New "Modified Resonance" Principle

Utilizing the principle of "modified reso-

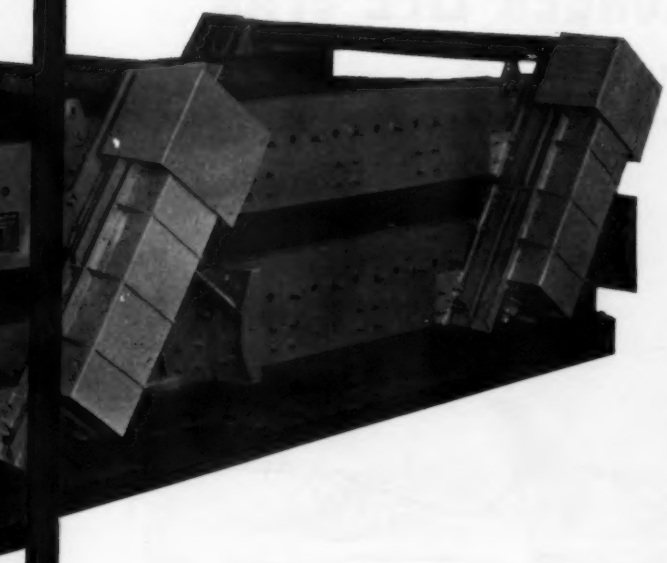
INDUSTRIAL DIVISIONS
PRODUCTS

VIBRATING SCREENS • VIBRATING CONVEYORS
CONVEYOR BELTING • CONVEYOR MACHINERY
INDUSTRIAL HOSE • DESIGN, MANUFACTURE,
ENGINEERING AND ERECTION OF COMPLETE
BULK MATERIALS HANDLING SYSTEMS
"GLIDE RIDE" THE NEW MOVING SIDEWALK

HEWITT

STAMFORD,

SAVE POWER *Possible*



nance," the new Hewitt-Robins hi-G Screen develops a controlled, extremely sharp vibrating action. This resonance is induced by a relatively small mechanical exciter producing powerful vibrations with added "kick" to separate materials according to size.

If you need larger screens—screens that operate on or near the horizontal and still screen at large openings—*screens with readily accessible lower decks for easy observation, spraypipe installation and quick cloth changes* . . . the hi-G Screen is your answer. For information about hi-G Screens and other Hewitt-Robins vibrating equipment, contact our nearest sales office or write to our offices in Stamford, Connecticut.

-ROBINS
CONNECTICUT

HEWITT-ROBBINS VIBRATING EQUIPMENT FOR THE AGGREGATES INDUSTRY

GYREX SCREENS. General-purpose, positive-stroke, 4-bearing screen with amazing versatility of application and an unsurpassed record for stamina in service.

STYLES M AND MS VIBREX SCREENS. Full-floating, unbalanced, pulley-type, 2-bearing screen. Offers sharp sizing of a wide variety of materials at low cost.

STYLE J VIBREX SCREENS. General-purpose screen applicable to a wide variety of screening operations. Wide range of sizes for suspended mounting.

STYLE HS HIGH-SPEED VIBREX. For fine screening applications (up to 100-mesh in some cases). Highly effective circle-throw screening action.

ELIPTEX SCREENS. Exclusive 3-way elliptical motion for sharpest sizing and most effective dewatering. Horizontal-operating flat screens.

CAR SHAKEOUTS. Both Heavy-Duty and General-Service units for unloading all sorts of materials from hopper cars faster, more efficiently and more economically.

VIBRATING FEEDERS. Fully mechanical vibrating feeder. Easy to install, operate and maintain. Extremely high capacities at very low power consumption.

VIBRATING CONVEYORS. To convey practically any substance in almost any form or condition. Available in several widths up to 150 feet in length with only one vibrator.

SCREEN CLOTH. Wire cloth in a variety of sizes, weaves and materials for virtually every sizing, separating or screening operation.

FOR SERVICE AND INFORMATION
ON BELTING AND HOSE
CALL YOUR LOCAL HEWITT-ROBINS
INDUSTRIAL SUPPLY DISTRIBUTOR
LISTED IN THE "YELLOW PAGES"

PROPER MAINTENANCE, USE OF CONVEYOR BELTS MEANS LONGER LIFE SPAN

By J. A. MULLER
Director of Research and Development
Thermoid Company
Trenton, N. J.

BELT conveyors, as a high-volume, low-cost means of moving bulk materials are well known to plant engineers and operators. Less known, however, is the fact that the life and the usefulness of a belt can be materially extended by following a few simple principles of installation and maintenance in handling conveyor belts.

Edge Wear Edge wear is considered by many specialists to be one of the chief causes of short belt life. The edges of a belt are carefully sealed in manufacture to prevent moisture from getting into the belt. However, excessive edge wear destroys the edge seal. Water will then attack the carcass, causing mildew and rot. If the water freezes, the ice particles will rapidly destroy the belt.

In most cases, edge wear is caused by misalignment of pulleys or idlers. The extra time and trouble it takes to get perfect alignment of the belt carriers will pay off in increased belt life. For best results use a transit to make sure that the centers of all carriers are in a straight line and that their surfaces are square to that line and in the same horizontal plane. Reducing edge wear usually means a reduction in power.

It is becoming standard practice to compensate for excessive edge wear by cutting off the worn edges before the belt has completely disintegrated and using the reclaimed, narrower belt in less severe service. New liquid neoprene compounds are available for sealing the newly formed edges against moisture. Liquid neoprene is also useful in building up worn spots in the cover to prevent more extensive repairs later.

Skirt-boards comprise another primary source of edge wear. Construction and placement must be carefully engineered by qualified personnel. The use of jerry-built, "baling wire" contrivances should be avoided. Fasten skirt-boards firmly, so that they will not eventually loosen and drag on the belt.

Loading Impact Loading conditions often cause belting deterioration. The loading point is a danger zone. Both existing and proposed installations should be regarded with the intention of creating "ideal" loading conditions.

One of the basic requirements for long belt life is to make sure that the material falls on the belt while moving in the same direction and at the same speed as the belt (Figure 1).

The material should be directed to the center of the belt, not toward one side. Material falling on the left side will make the belt ride out toward the right and *vice versa*. As a result, the belt will not train properly and will rub against guard boards and training idlers (if used), increasing edge wear (Figure 2).

When lumpy material is being carried, an attempt should be made to have such material cushioned by a prelaid layer of fine material. A screen or "grizzly" at the bottom of the loading chute will satisfactorily deposit a layer of fines over the belting, thus providing protection against

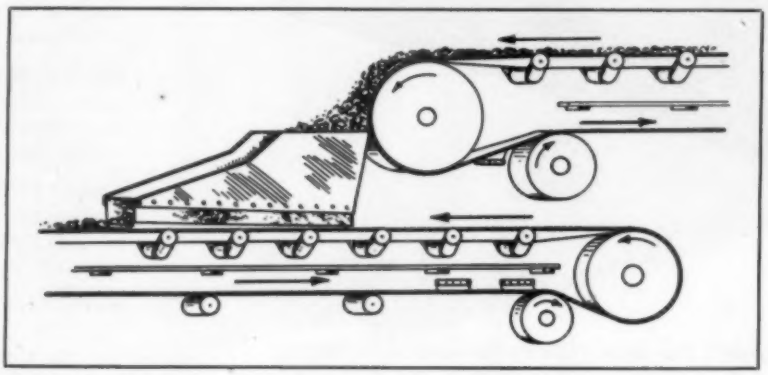


Fig. 1—Correct loading conditions shown here will prevent chattering and other undesirable conditions.

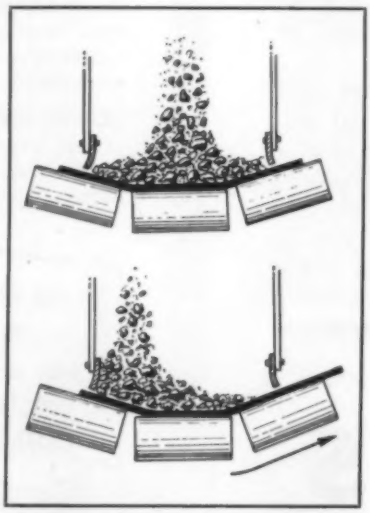


Fig. 2—Correct (above) and incorrect (below) loading.

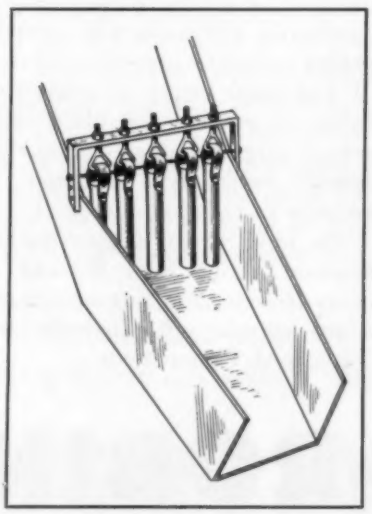


Fig. 3—A simple device for preventing excessive velocity.

bruising. In some instances an oval or "fish tail" notch cut in the lip of the chute will aid in prelaying the fines.

At the same time, the velocity of loading-material flow should be controlled by pitching the loading chute properly. If this is not feasible, a baffle of iron or wooden bars should be constructed in the chute, suspended from the top and free-swinging at the bottom, to reduce the velocity of material flow onto the belt (Figure 3).

The vertical distance between chute and belting should be small to prevent excessive velocity of material, which, in the case of lumpy materials, might be great enough to cause belt damage.

Fig. 4 — A typical belt repair kit containing emery cloth, a sharpening stone, cobbler's knives, rubber cement, a sheet of patching rubber, cotton duck impregnated with rubber, belt fasteners, waste for cleaning, fabric pulling pliers, and a roller.

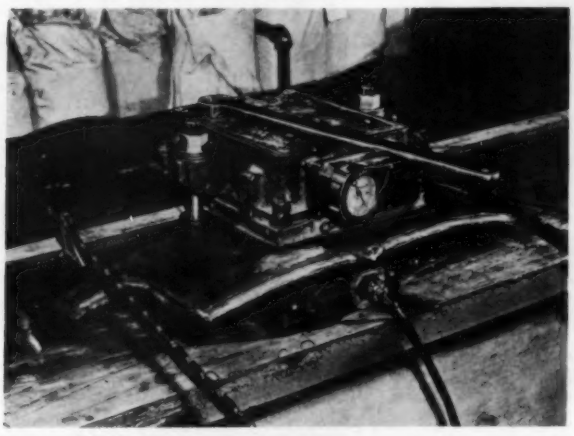


Fig. 5 — A portable vulcanizer in service. The top half is bolted to the bottom with the belt between. The old belt in front serves merely to support the part of the vulcanizer not in contact with the repaired spot.

Material should not strike the belt directly above a solid pulley because the resulting hammer-anvil action will quickly render the belting unusable. The chute should be located so that material will strike the belt between idlers. However, in cases where heavy material is being loaded, it may be necessary to load directly over rubber-covered or pneumatic idlers.

In some cases, impact load between idlers will set up belt vibration. The resultant chattering may depress the belt sufficiently to allow material to escape under the skirtboards. This condition may be prevented by locating the chute so that loading material will strike the belt far enough ahead of the tail pulley to allow insertion of at least one belt-steadying carrier pulley. Also, carrier pulleys should be more closely spaced around the loading zone because of the impact loading of the belt at that point.

Proper Design Of Loading Chutes Construction of loading chute skirtboards and flexible skirts should be carefully considered. Skirt-boards should not touch the belt, but should be positioned slightly above the belt. They should be long enough to settle the material before it leaves the loading area. Flexible skirts are preferably improvised from rubber-covered edges of belting remnant. These remnants should be so placed that the rubber-covered edge is next to but not touching the belting. Should this be reversed, and the exposed-fabric edge of remnant placed against the moving belt, grit will collect in the fabric. Resultant abrasive action will, in time, wear a track through the belt cover.

Vertical spacing between chute skirt-boards and belt should increase toward the open end of the chute. Thus the width of flexible skirts, as cut from a belt remnant, should decrease in the direction of belt travel. This construction minimizes spillage around the loading point. At the same time, wedged-in lumps of material will work themselves free by the forward motion of the belting.

Pre-installation Suggestions Belt maintenance begins even before the belt is installed. When received by truck or railroad from the manufacturer, it should never be dropped off; it should be skidded, rolled, or lifted. A large roll of belt may weigh several tons and will develop a surprising impact over the area of contact, enough to weaken the belt, if it is dropped. If the belt roll falls on a stone, a tool or a track, a cut or puncture may result. If the belt is not installed at once, it should be stored, protected from sunlight, where it is not likely to be damaged accidentally.

Installation threading of the belt over the idlers and pulleys is critical, and much belt damage may occur during installation. More than ordinary care and planning are needed. Avoid sharp bends. Minimize dragging over sharp rough surfaces. Don't twist sharply. Before the belt is run, check for tools left accidentally on the return side. Don't use excessive tension in pulling the belt over the idlers and pulleys.

Maintenance Organization Authority and responsibility for belt maintenance should be delegated to one man who with his assistants frequently checks lubrication and condition of idlers and pulleys, examines the belt for excessive wear, inspects splices, maintains a kit of belt repair tools, and repairs cuts and tears as soon as discovered. The belt maintenance boss should also check the belt for oil and grease, which should be removed. Avoid over-lubrication of pulleys and idlers. In large companies using many thousands of feet of belting, a rather elaborate organization may be justified. Such a setup should include a belt repair shop with both portable and permanent vulcanizing equipment, belt tables, and drying racks.

Even in the best regulated plants, some material falls off the carrying surface of the belt onto the return run of the belt. If this material is not removed, severe damage to the belt will occur when the belt travels around the pulley and the misplaced

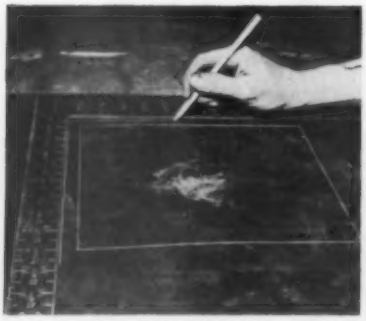


Fig. 6—The section of the belt to be removed is carefully marked out on the top cover with a square—parallel and at right angles to the edge.

Fig. 7—A thin strip ½ in. wide is marked out inside the large square and then cut through the cover to the first layer of fabric with a sharp cobbler's knife.

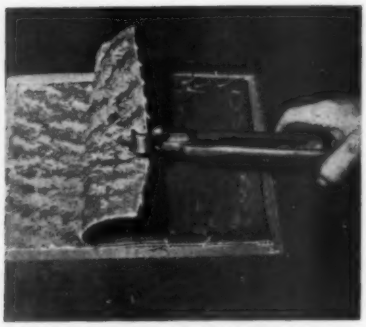


Fig. 8—Belt pulling pliers are used to pull off the first ply with its adhering cover. Remove progressively smaller blocks of fabric with each successive ply.

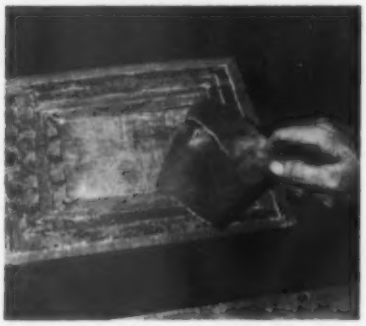


Fig. 9—Finally the bottom cover is removed. The damaged area has been completely removed. The belt is turned over, and the bottom cover is pulled off in a strip 2 in. wide.

Fig. 10—Belt fabric exposed must be completely dry. The cavity is cleaned and roughened and rubber cement is applied thoroughly.

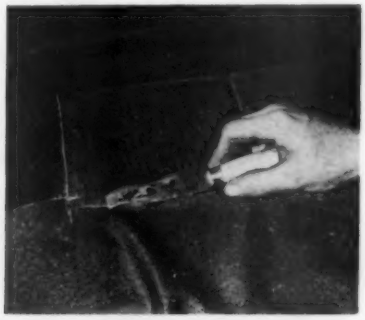


Fig. 11 — After cement has been applied, squares of rubber-impregnated fabric are cut to fit each layer until the cavity is filled. Uncured rubber (the same as the original cover) is cemented in and rolled flush. Overlapping edges are trimmed flush with the original cover.

pieces are squeezed between the belt and the pulley. Brushes and scrapers are often used, but the best solution to the problem is to completely cover the return side of the belt with a wooden or metal deck.

When a permanent installation is made out of doors, it will pay to cover the belt with a wooden or steel structure. This will keep off direct sunlight and rain, both of which have damaging effects.

Belt Repairs In order to get the maximum life out of conveyor belting, users should take particular care to repair all belt damage as soon as it is discsovered.

Belt fabric exposed to weather will absorb moisture if the protective cover becomes damaged, and may even become soaked. In warm weather, this condition leads to mildew and rot; in winter, ice crystals may gnaw at the fabric from within as the belt flexes. Immediate repairs not only prevent the spread of damage, with its threat of premature failure, but also keep out water, which is the natural enemy of the conveyor belt carcass.

Simple tools and procedures will help the maintenance man to give belting the proper attention. An adequate repair kit includes a sharp cobbler's knife and a stone to keep it sharp; a supply of emery cloth, rubber cement, inner tube patching rubber, rip plates and standard belt fasteners and accessories, together with rags and gasoline for cleaning (Figure 4). As each belt is installed, remnants should be saved; they will prove useful in subsequent repairs.

Fig. 12—The patched belt is placed in the vulcanizer.

To mend long, deep cuts which go through to the fabric, open the cut, clean out all dirt, and cement the cut closed, allowing the cement to dry thoroughly before the belt is restored to service. Where bits of torn cover leave exposed spots with only slight damage to the fabric, remove the loose ears of cover stock by carefully cutting a curved and bevel-edged area around the spot; then sand the edges, apply the patch flush with the belt cover.

Where gouges have penetrated the belt, or longitudinal rips have occurred, these points must be cleaned, sanded, cemented, and reinforced with rip plates at 3-in. intervals. Transverse rips require similar treatment with standard belt fasteners instead of rip plates. Use rip plates on longitudinal rips only, and standard fasteners on transverse rips only. When holes in the belting do not permit the simple use of rip plates and fasteners, cut out the hole into the smallest possible rectangle with its sides parallel to and at right angles to the belt edges. Then, from belting remnants, cut an exact fit for the hole and insert the piece, fastening it with belt fasteners all around the patch. Cement all edges thoroughly. Where it is necessary to prevent seepage of fines through belt repairs, remove one ply of fabric from a belt remnant and plate it under the fasteners and rip plates.

(Continued on page 123)

What you want When you want it!

FROM Albemarle's vast timberlands, pulp mills and bleaching plants to the final production of Raymond Multiwalls, strict technical control assures the complete protection of every "bagable" product . . . Papers of all descriptions including a wide range of specialties adapted to individual needs . . . Any number of plies . . . Clean, radiant printing . . . And of special importance, quick deliveries always.

Raymond
MULTIWALLS

RAYMOND BAG CORPORATION

Albemarle Division of PAPER MFG. COMPANY
Middletown, Ohio • Richmond, Va.

seismological evidence is not enough— structural and legal know-how are needed

The Court Is the Payoff

THERE are hundreds of suits on the dockets of the courts which seek to collect millions of dollars from those using explosives because of alleged damage to structures, wells, springs, etc. Hardly one in a hundred has any real basis, if our experience is any criterion, yet the courts have been paying off literally and liberally with the money of the operators in far too great a proportion of these cases.

By STRATTON O. HAMMON
Vibration Damage Specialists
Louisville, Ky.

We all realize that the root of the trouble lies in the ancient, deep-seated and fantastic ideas held by the public in regard to explosives. The operators wish that explosives had the destructive power which the public attributes to them, for this supposed power would drastically reduce the cost of removing material. These ideas, no matter how absurd, are often imposed on explosives users in the form of legal judgments by representatives of the people known as fact-finding bodies, the judges and/or juries.

However, those engaged in the mining and quarrying industries do not realize that they are partly to blame for the present state of affairs. Operators are so engrossed with problems of production and sales that they give little thought to liability until they are served with notice of a suit. Having given little thought to the matter, they hand the case over to an attorney, who has given it no thought at all; and it is finally tried by a court that may never have heard this type of case before. It is little wonder that justice sometimes miscarries.

It is futile to depend entirely upon the insurance carriers, for it is certain that the losses sustained will be reimposed upon the mining and quarry industry through increased insurance rates. The insurance industry must adjust its rates to changing conditions or it would be out in a very few years. I have sat in on insurance actuary conferences. The latest condition in that particular field is taken into consideration in setting the new rate. A loss sustained by one operator is, in effect, paid for by the entire industry during the following year.

Stratton O. Hammon

Not only does the industry eventually pay for all insurance losses, but it is also true that in a number of instances the total of the damages claimed against a single operator by a number of litigants has exceeded the total liability insurance carried. In one case involving a rock excavating contractor near Cincinnati 241 claims have been made, totaling roughly $400,000. His insurance coverage amounts to only $100,000. This can happen to almost anyone using explosives.

Some of the large increase in the number of damage suits filed cannot be avoided, for the reason lies in the equally large increase in the population. Because of the rapid increase in population houses, stores, churches, and factories are to a greater and greater extent crowding in on quarries and mines. This condition will probably never be alleviated; it will grow more acute as time goes on.

Another factor which is aggravating the situation is the greatly increased use of explosives in recent years. The yearly consumption of commercial explosives has increased 321,948,506 lb. since 1922.

Add to these facts a definite increase in the awareness on the part of the public that substantial sums of money can sometimes be secured through the courts for damages, real or fancied, and it can be understood that the operator faces a very serious problem. Unfortunately the judges and juries from which the operator has a right to expect a fair and impartial searching of the matter too often have their heads full of old witches' tales in regard to the destructive power of explosives. Some of these so-called fact-finding bodies, being human, strongly resist having their erroneous ideas changed; they resent efforts made to set them right by evidence of scientific or professional proof to the contrary.

In the past the industry has merely bungled along with the problem, and this situation sufficed for the relatively scattered cases and the low incidence rate. But with hundreds of injunction suits seeking to stop operations, and sizable damage suits confronting the operators, old defense measures must be reappraised, and entirely new methods must be devised to meet the changing situation.

In the past a great deal of dependence was placed on seismology to extract the operators from a bad situation. Anyone experiencing a legal problem connected with blasting cannot expect a solution or control by scientific methods alone, especially when the definition intended for "scientific methods" are those of seismology and explosives engineering.

It is of utmost importance to understand this statement correctly. Seismology and explosives engineering constitute an indispensable part

New Kaiser Unitized
Kiln Liner*
T3
Special "L" shaped steel shim bonded to side and part of hot face.
Attached cardboard ring spacers provide for longitudinal expansion.

*Patent applied for.

Saves up to Half the Production Usually Lost in Kiln Down-Time!

Now you can eliminate the costly process of inserting steel plates and cardboard spacers between bricks while lining your cement kiln—*and let the time saved earn profits in extra production.* Already operators have reported 30 to 50% savings in installation time!

The unique Kaiser Chemicals development that makes this possible is the bonding of accessories to Kaiser Periclase-Chrome Brick. And in addition to increasing production by drastically decreasing installation time, you get these extra benefits:

• Assures Correct Installation—When installing Kaiser T3 Unitized Kiln Liners, shims are automatically aligned between all bricks. And because part of the shim overlaps the hot face, it is easy to see by visual inspection that all bricks are placed correctly, hot face inside.

• Takes the Guesswork Out of Expansion Allowances—The thickness of the adhesive that bonds the steel shims to the brick automatically provides the correct allowance for circumferential expansion. The bonded cardboard spacers give added protection by assuring correct provision for longitudinal expansion. No additional spacers are needed.

• Coats Faster—When the kiln is fired up the overlapping part of the shim melts, oxidizes, and combines with the feed to speed formation of hot zone coating.

• Reduces Inventory Problems—Because the shims and cardboard spacers are bonded to the brick *at the factory,* you need no separate orders or stock records for them. And, in turn, your materials handling costs are reduced.

Let us show you how this new Kaiser Chemicals development can help you reduce kiln down-time *and* give you longer liner life. Contact your Kaiser Chemicals sales engineer now.

Kaiser Unitized Kiln Liners are available in all sizes of the standard 9" x 6" x 3½" Series Arch Brick and Wedge Brick. Write or call for descriptive folder.

Kaiser Chemicals

Pioneers in Modern Basic Refractories

Refractory Brick & Ramming Materials • Castables & Mortars • Magnesite • Periclase • Deadburned Dolomite

To get more information call our nearest Sales Office: Kaiser Chemicals Division, 1924 Broadway, OAKLAND 12, California . . . 3 Gateway Center, PITTSBURGH 22, Pa. . . . 518 Calumet Bldg., HAMMOND, Indiana.

To obtain free copies of Kaiser Chemicals Product literature write Kaiser Chemicals Division, Kaiser Aluminum & Chemical Sales, Inc., 1924 Broadway, OAKLAND 12, Calif., Dept. C 6531.

See "THE KAISER ALUMINUM HOUR." Alternate Tuesdays, NBC Network. Consult your local TV listing.

of the organized defense against injunctions and damage suits, but *only* a part, and a small part, at that. We use these scientific methods day by day and respect them fully. In our own minds these offer proof enough, but we have long since learned that judges and juries do not hold this opinion; and there is no way in which a case can more quickly be lost for an operator than to dump scientific proof unceremoniously into the laps of a jury.

The very first legal move often made by an opposing attorney will be to prevent a seismologist and/or explosives engineer from testifying as to the effects of vibrations or concussion upon a structure. He will contend, and the judge will largely support him, that such experts are competent to testify only on the source of the blast and the transmission of its energy by vibration through the earth or by concussion through the air to the structure in question. He will protest that an architect or a structural engineer is the only professional man competent to give evidence or opinions as to the effects of vibrations or concussion upon structures.

This very thing happened in Docket 1511 of the Supreme Court of New Jersey, from which the following excerpt was taken: A leading eastern seismologist is sworn. Direct examination by Mr. Price follows.

Question: What is your profession? A. I am a seismologist. Q. What is that? A. A student of earthquakes and vibrations. Q. I wish you would describe or explain to the jury what the general relationship is between building construction such as of brick or the roof construction such as involved in the Baker Theater, and the existence of glass with reference to the effect of explosive force upon it?

Mr. Gennet: If your Honor please, I object to the question. There has been no qualification of this man as having to do anything with engineering or constructional engineering or whether he knows anything about structures of buildings. Your Honor has ruled on engineers and their limits on buildings, and I think we should have a rule at this point as to the qualifications of that man who is a seismologist on the structural phases of the building.

Mr. Price: If your Honor please, I could develop it further. I thought I had. I'd like to ask a few more questions since the question I put to him has been objected to. I'd like to digress a moment to ask a few more questions about his studies in that regard.

The Court: The witness has testified that he has studied the effects of air waves through the ground or the force of explosions through the air and studied the effects upon buildings. But, I think it may be well to ask him some more questions because, as far as I remember, that is as much as he said.

Q. And have you made experiments and given study to the effect of the transmission of explosive force through the air as related to glass. A. Yes.

Q. Windows and so forth? A. Yes.

Q. My question was, and I will repeat substantially, as I did before . . .

Mr. Gennet: If your Honor please, I still make the same objection that I made to this same question before. This witness is not qualified as an engineer in any sense of the word and he is not qualified to testify as to the structural effect or to the effect on structures because he hasn't even indicated that he has made any study of it and the study referred to, of course, apparently private study; so that I feel that he is not qualified in any fashion to testify concerning structural damage to buildings as a result of either air blasts or even as the result of earth blasts.

This case was lost. It would have been different had the defendant's attorney been able to say, simply, "Your Honor, this man is a registered architect and therefore is an authority on structures." All objections to his testimony would have had to cease, and he could then have got his story over to the jury as an expert witness, with greatly increased authority. It then appears that modern firms of vibration damage specialists must broaden their operational base, with architectural and structural engineering training and experience, in addition to seismology and explosive engineering, in order to provide the greatest protection to their clients. This increased service more than doubles the possibilities of a successful termination of a damage claim. A seismological report alone, setting forth that certain vibrations could not damage a structure, is a negative report. An architectural report tracing the damage to its true structural sources is a positive report. Positive evidence always outweighs negative evidence from a legal standpoint.

Being an expert witness in court requires years of study and a great deal of experience. There are many devices used by attorneys in a court room. Evidence may be introduced in certain ways and not in others, and a knowledge of the rules of evidence is indispensable in plotting a course. Complicated technical subjects must be reduced instantly to common language which the most uneducated juror can understand. It requires scores of appearances in court before the nervousness and fear departs and the witness has a clear, sharp mind, ready to cope with any maneuver which the opposing attorney may attempt.

An expert witness spends much more time in court than the busiest of trial attorneys. Because of this fact he begins to pick up an idea here and there, especially if he has had some training in law. This legal knowledge is narrow, since it concerns only this one subject in which he is an expert, but it becomes acute from constant repetition, constant effort at perfecting, and the slightly different approach which each new attorney teaches him. After a long while he is able to carry over good points from one attorney to the next. He becomes a legal storehouse for this one narrow branch of law.

If we are to cope successfully with blast damage claims, this is by no means the end. Even if the operator secures the services of the best of vibration damage specialists, he is just off to a good start. The stature of the attorney he selects to represent him is of the utmost importance. The best vibration damage specialist in the country would be only partially effective unless he is paced by and is working in co-operation with a good lawyer. A good expert working with a poor attorney is similar to a fine racehorse being ridden by an incompetent jockey. The horse may be able to prevail in spite of his jockey, but it would be better not to bet on such a race.

It has been our experience that the selection of counsel is taken far too lightly, and that conditions would improve greatly if the operator would use the same discrimination in choosing his legal representative as he does in choosing the mechanical equipment in his mine or quarry. The operator should also insist upon an equally careful selection by his insurance carrier. It has been experienced that some carriers have a notorious tendency to award their cases to "legal factories," large firms specializing in insurance cases. Many times these firms insist upon compromising cases rather than trying them, the main reason being that 20 cases can be compromised while one is being tried, and the fees are about the same in each case. However, for every case lost or compromised, several new ones usually spring up in its place; and in the end the industry

must pay the entire bill.

We have discovered, after long and close contact with these problems, that the legal profession has as high a percentage of incompetent practitioners. This is also true of the architecture and engineering professions, with which we are even more familiar. Attorneys are subject to a variety of faults. Some seem to have them all, some possibly only one. It is the rare man who has such native ability and experience that he has learned to avoid all of the faults. However, blast damage cases by their nature are so difficult to defend that it is just this rare and faultless lawyer who must be retained if the matter is to be brought to a successful conclusion.

Among the common legal faults is the cardinal sin of simply failing to know the law. This fault is far more prevalent than one would imagine. Next comes the inability to organize and properly introduce the facts of the case. I have seen attorneys so frightened in a court room that they could not eat during the several days of a trial. Others tremble and perspire while they are on their feet before a jury. Obviously, a man cannot give of his best when he is in this condition. Some attorneys can prepare a fine case before the actual trial, but because of personality factors or for other reasons are even harmful to the case in the court room. Others do not have the ability to prepare a case, but are at their best before a jury.

Recently, in an Eastern state, I spent 12 hours rehearsing my own testimony with the defending attorney, who had been prosecuting attorney several years before. He wrote down each question he intended to ask me, and with it my answer. I pointed out that a considerable number of the questions would not be allowed by the ordinary judge on the grounds of hearsay, and should therefore be phrased in a different manner, but he brushed off the suggestion by saying that this was his home county and he knew exactly what this judge would and would not allow.

This attorney, who was so sharp and keen outside the court room, proved to be the hesitating, lost type in court. He forgot to read the questions so laboriously written out. In addition, the judge sustained all the objections of the opposing attorneys to the method of introducing the hearsay evidence, which was in the form of scientific books and pamphlets supporting our viewpoint. The attorney had been putting on a bold front outside the court room but later fell to pieces. Unfortunately, this happened to be a test case upon which a score of other cases depended.

In our experience, the most prevalent fault is that the lawyer will not work hard in reading the law and organizing the evidence pertaining to a particular case. Inspired legal craftsmanship is, like many other accomplishments, a matter of 10 percent inspiration and 90 percent perspiration. It is simply a matter of expending enough energy to cover fully all the angles which might be of help in a given trial. An operator has a right to expect this from his attorney. A lawyer who properly organizes the law and the facts in a case can box the judge within legal limits which make him harmless, even if he is hostile.

Recently in an Appalachian mountain town we tried a blast damage case for eight full days. It was learned half way through the trial (when it was too late to do anything legally about it), that the judge was a vice-president in a firm of which the plaintiff was president. The judge used every method to prejudice the jury, even addressing the defending attorneys as "you men from the low country." In spite of this tactic, and in spite of the fact that the plaintiff was a fellow small-townsman, while the defendant was an Italian contractor from the "low country," the jury found in favor of the defendant. This came about because the attorney of the defense was flawless and because he kept hammering his points day after day until there was practically nothing else that could be done in the way of a verdict.

It has been said that in selecting an attorney it should be remembered that most judges are elective and thus some may keep a weather eye on the voting public. Ability is by far the most important attribute in an attorney, but connections and standing in the community should not be entirely ignored.

The incident mentioned previously, involving 241 claims, happened in a town with a population of about 20,000. The relatives and friends of the claimants probably numbered 5,000 people or a quarter of the entire population. The judge stood firm and fair against tremendous pressure, but it would have been something less than intelligent if the defense had not commissioned as their local attorney a man who held the highest public esteem and had himself been a former judge. No damage has been collected from this operator, although a year and a half has passed, except in two cases involving damage which was *definitely caused* by the blasting. These two cases were settled by the liability insurance company within a week.

Thus far we have been talking of court cases. Most claims, however, never reach court. It is undeniable that the best way to keep them from being tried is to make it so probable that the plaintiff will lose the case that he does not wish to take the gamble. In other words, when the ratio of his necessary costs in time and money to prosecute the trial are too high in relation to his probable gain, he seldom elects to go on. A full show of force will stop most claims.

In summation, mine and quarry owners are faced with a bad situation concerning blast claims, and it will steadily grow worse. To abdicate, permitting the insurance companies to handle the matter will result in exorbitant rates, if these companies do not defend more intelligently and vigorously than they have in the past. The first step in solving the difficulty must be taken by vibration damage specialists in broadening and perfecting their service to operators by adding both architectural and structural engineering backgrounds to their seismological and explosive engineering abilities. They must also prove their competence in expert witness work and at least some legal know-how. Finally, this type of specialized case is so difficult to defend that the ordinary run-of-the-mill attorney is out of his depth. The very best of lawyers must be retained.

Conveyor Belt Maintenance

(*From page* 118)

Vulcanized patches are superior to those described above, but they require the addition of a portable vulcanizer (Figure 5), rubberized fabric, tie gum, cover stock, a one-ply knife, and fabric pliers. In preparing a vulcanized patch, work down into the damaged belt as far as necessary by removing progressively smaller blocks of fabric with each successive play. Clean, roughen, and cement the cavity, neatly fit in blocks of new fabric, and finally apply the uncured cover. Skive the edges of the patch flush, and vulcanize (Figures 6-12). Such patches cannot be made successfully unless the belt is dry, because moisture will form internal steam blisters. For this reason, large users have drying racks in their maintenance shops. Only very large users of conveyor belting will find it economical to vulcanize their own belt patches and splices. Small users may call on the manufacturer or his distributor for splicing and repairs.

Another ON THE SPOT Report

Quality Limestone Products Maintains Steady Growth

Wisconsin plant's diversified output includes aggregates, agstone, building stone

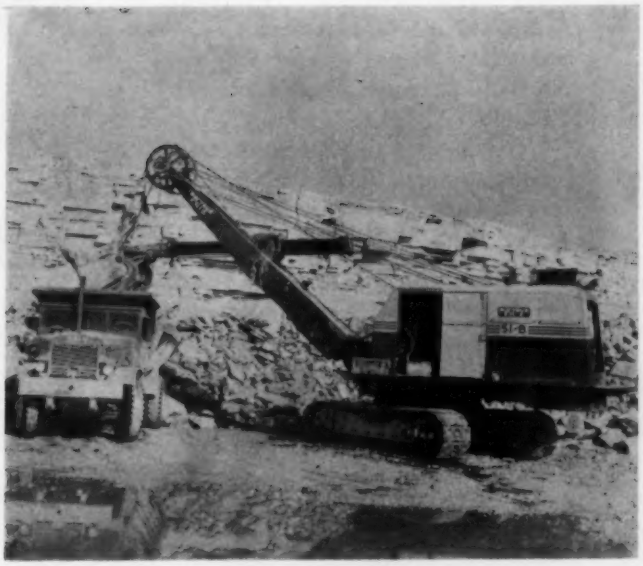
By BUREN C. HEROD

IN the short span of less than eight years, Quality Limestone Products Company, Sussex, Wis., has not only opened a new quarry in an area that was farmland as recently as 1948, but has revamped and expanded processing flow three times in that period. As a result, the modern 250-t.p.h. facility now producing up to eight different products bears little resemblance to the initial 60-t.p.h. plant.

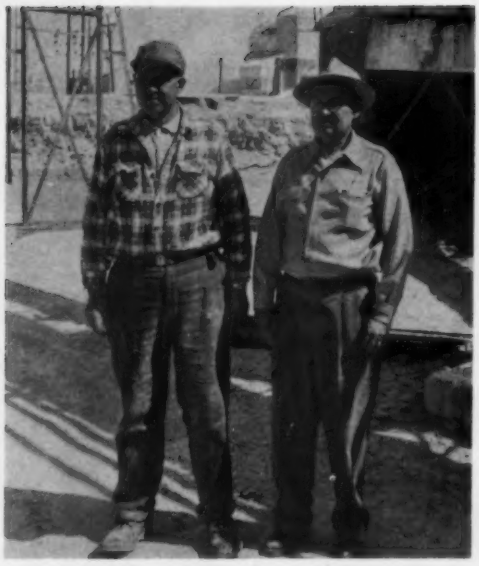
Within the last two years, for example, original quarry equipment has been replaced with a new rotary blast-hole drill, a shovel, and haulage units, while at the same time the plant flow was being expanded and revised through the addition of sizing units and the installation of a heated-deck screen. In addition to the aggregates and metallurgical stone products processed in the crushed stone plant, diversified output is further represented by the production from a separate agstone plant and the Lannon, wall, and flagstone products made by a crew of stonecutters.

Despite the fact that the present plant operations and layout were rather recently established, company officials are currently studying plans

A view of Quality Limestone Products plant, looking from the scalper tower toward the conical surge bin and the primary crusher. In the right background is the thinly-bedded ledge of stone reserved for stonecutting.



One of the new end-dump haulage units and a shovel recently added at the quarry. Bedding characteristics of the limestone formation are evident in the background.



L. F. Wolf, vice-president and general superintendent, and C. G. Wolf, president and general manager. A sister, Florence E. Wolf, is secretary-treasurer of the firm.

for further expansion. When accomplished, this will include another secondary crusher that will be operated as a companion and in parallel with the one now in operation; and the enlarging of agstone productive capacity through the installation of additional screening and milling equipment in the agstone plant.

In 1948 the newly organized firm acquired a 65-acre farm tract near Sussex. Exploratory drilling revealed that the entire area was underlaid by good stone containing less than 2 percent of silica and iron oxides. A part of the Niagaran dolomite, the deposit at this location has thinly-bedded strata over the upper 10 ft., but is more massive, hard, and highly crystalline from that level down. At one end of the quarry, a ledge of the thinner upper strata is reserved for the stonecutting operations. The balance of the quarry is operated on 18-ft. benches in supplying stone to the crushing, screening, and aglime plants.

Blast holes are sunk with a Joy 225 truck-mounted rotary drill equipped with 4¾-in. tri-cone bits. In the usual pattern a double row of holes is put down with a 13-ft. spacing and a burden of 9 ft., and charged with Hercules Gelamite. Normally, three tons of broken stone are recovered per pound of explosive used in each shot. When secondary breakage is necessary, a dropball suspended from a P&H 225 LC crane is used.

Broken stone is loaded into the two 15-ton end-dump Euclid quarry trucks by a 2-cu. yd. Bucyrus Erie 51 B shovel. Each truck makes an average of seven trips per hour between shovel and crusher—a distance of about one-half mile. These three units were acquired last year as replacement for the original quarry equipment.

The installation, a little over a year ago, of the new primary crusher —a 42- by 50-in. Cedarapids double impeller impact breaker—along with a new screen represents the most recent move toward expansion of capacity. The original plant consisted of a small gyratory crusher (16-in.) and a single screen. This setup was later revised through the installation of a 32- by 40-in. impact breaker and a second screen. As the plant now stands, its equipment includes a pan feeder, the larger impact breaker, a surge bin and a feeder, a scalping screen, a secondary cone crusher, and two finishing screens, one of which has a heated lower deck.

Quarry-run stone is trucked up a ramp from the quarry floor and dumped into a hopper above a 38-in. by 18-ft. Cedarapids apron feeder, on which it is transferred at the rate of 250 t.p.h. to the impact breaker. Each impeller on the latter is driven by a 100-hp. Allis-Chalmers motor. Crusher discharge, with a maximum size of about 4½ in., is transferred on a stub conveyor to a 30-in. by 85-ft. belt, on which it is carried to a conical, 125-ton capacity surge bin.

From the latter, the crusher product is transferred by a Barber-Greene feeder to a 24-in. by 155-ft. Universal belt conveyor that discharges over the scalping screen. A 4- by 12-ft. Simplicity triple-deck unit, the scalper is fitted with 3-, 1¾-, and ⅝-in. square opening screencloth on the top, middle, and bottom decks, respectively.

Top-deck oversize is fed to the secondary crusher, an Allis-Chalmers 648 Hydrocone driven by a 100-hp. motor of the same manufacture. Material retained on the middle deck, and throughs from the bottom deck are chuted to the appropriate section of the two-compartment, 175-ton Butler bin on which the scalper is mounted. Stone retained on the bottom deck is chuted to a 24-in. by 135-ft. Universal belt conveyor, where it is joined by the ½-in. top size product from the secondary crusher. The minus ⅝-in. material may also be added by means of a short conveyor from the storage bin containing that size.

These materials are then transported on the 135-ft. belt above to the final screening phase. Since there is no circulating load at any point in the processing, the plant has a straight-line flow from the quarry shovel to the loading bins below the final screens.

Final screening is accomplished with two units, each separately mounted on a three-compartment, 200-ton Butler bin, and protected from weather by housing of corrugated sheet metal. The feed discharges on a 5- by 14-ft. triple-deck Ripl-Flo that is fitted with ⅜-, and

Completed in 1954, this Research-Cottrell precipitator cleans the gases from Kiln No. 5 of Missouri Portland's Prospect Hill Plant. The gases from this rotary wet process kiln pass from the kiln end housing, through the precipitator, induced draft fan and then up the stack.

Rapping puffs were eliminated in this installation with Research-Cottrell's electronically controlled M. I. Rappers. This method of continuous, sequential rapping avoids dust re-entrainment in the gas stream and assures optimum precipitator performance at all times.

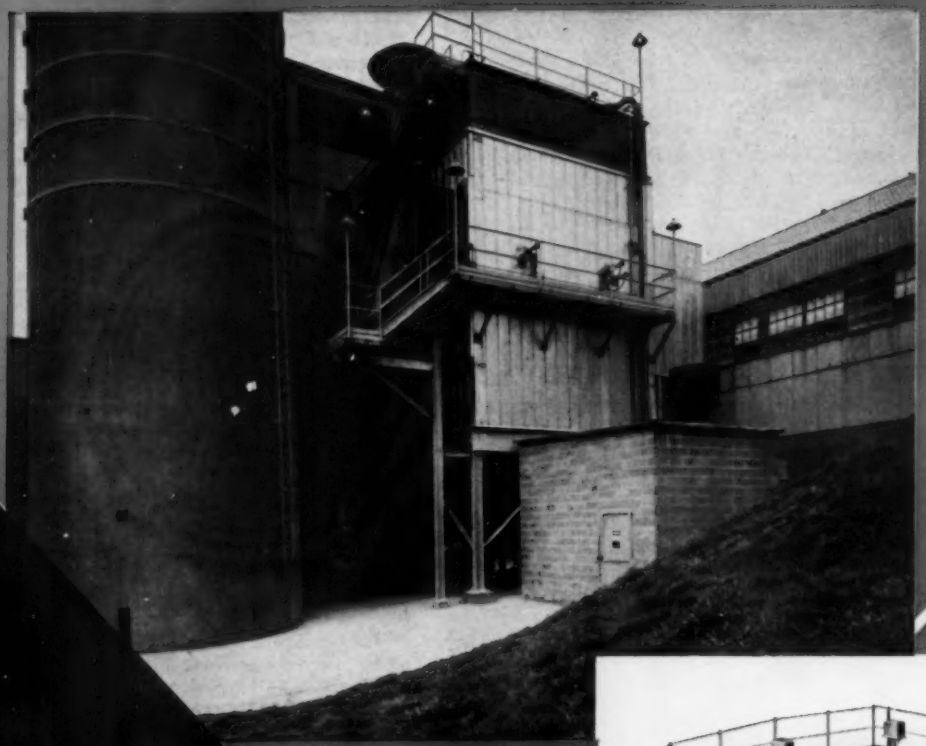
Research-Cottrell Precipitator

at Missouri Portland

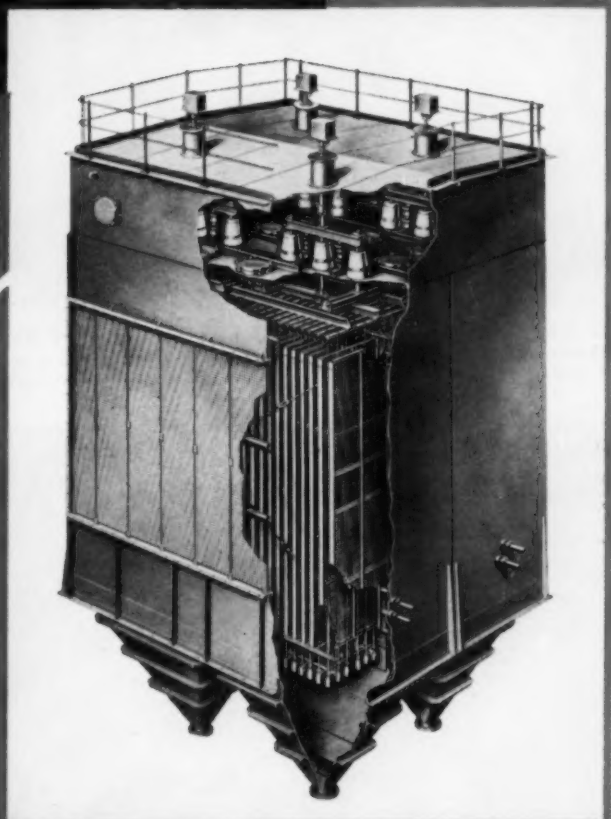
In addition to this installation, Missouri Portland has ordered three more Research-Cottrell precipitators. One, installed early this year, cleans the gases from Prospect Hill's 12′ x 450′ wet process kiln.

Two other units have been ordered for two dry process kilns at the Sugar Creek Plant, Kansas City, Mo. M. I. Rappers will be included on all these installations.

For a detailed description of Research-Cottrell precipitators and their applications in the cement industry, write for Bulletin GB.



At Left:
Shows Research-Cottrell precipitator, connecting flues and stack. Cement block building in foreground at right is substation which contains two half-wave rectifier sets and M. I. Rapper control equipment.



At Right:
Cutaway drawing of the Research-Cottrell expanded metal plate precipitator installed at Prospect Hill Plant of Missouri Portland Cement Co.

Research-Cottrell, Inc.

Main Office and Plant: Bound Brook, New Jersey • 405 Lexington Ave., New York 17, N. Y.
Grant Building, Pittsburgh 19, Penna., 228 No. La Salle St., Chicago 1, Ill. • 111 Sutter Bldg., San Francisco 4, Cal.

¼-in. opening screencloth on the upper and middle decks. An Allis-Chalmers 8-mesh Thermo screen is installed on the lower.

Since as little as 1 percent moisture will cause blinding in the 6- to 8-mesh range, and in view of the fact that this is a single-pass plant, it is mandatory that blinding be eliminated and that all screening be done with no deterrent to the flow. According to company officials, the heated screen has done the job, and a duplicate system from the proposed new secondary crusher on will be installed in the future. Two Allis-Chalmers heating units comprised of braided copper bus cable, stainless steel hook strips, and rheostat controls provide the stainless steel bottom deck screencloth with heating current. The 440-volt power brought to the screen is stepped down, and then varied through the rheostat control in accordance with the moisture content of the feed. Normal heating current applied is in the neighborhood of 10 v.

The ⅜- by ¼-in., ¼-in. by 8-mesh, and minus 8-mesh materials separated on the middle and lower decks of the Ripl-Flo are dropped to the respective compartments in the underlying bin for these fine aggregate and agstone products. Material retained on the top deck is chuted to an 18-in. by 33-ft. conveyor and transported to the other finishing screen—a 4- by 8-ft. Telsmith.

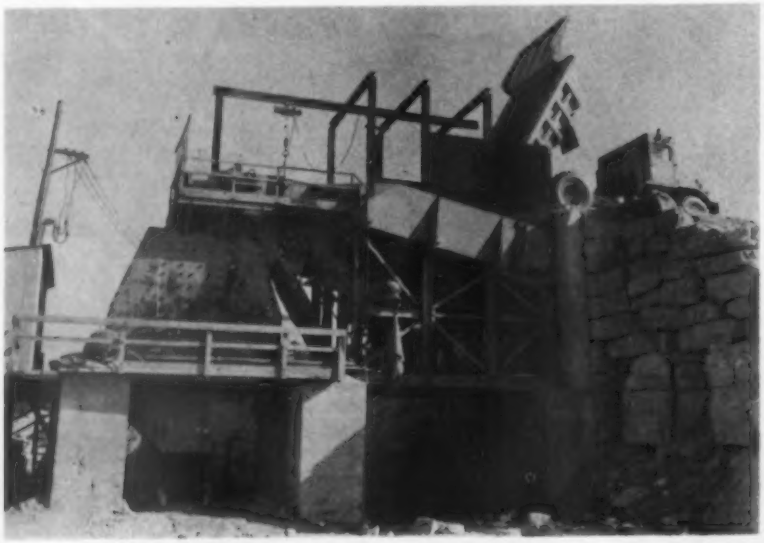
Medium-sized aggregates are separated on the 1¾- and ⅞-in. opening top and bottom deck screens and dropped into the underlying compartments of another truck loading bin. Twin City Iron supplied the greater part of the screencloth used on this screen and the other two units.

On occasion when demand for finer sizes exceeds that provided in normal operation, stockpiled stone (previously trucked to a storage area in the quarry from the surge bin or the coarse material bin below the scalper) is reclaimed by clamshell and trucked to a hopper near the secondary crusher. It is fed to the crusher on a 24-in. by 60-ft. conveyor, with the crusher discharge then following the balance of the routine processing.

The stockpile is also drawn upon, along with those truck bins containing stone up to 2-in., to feed the agricultural lime plant. Hauled in trucks to this plant, the materials are dumped into a hopper at one end of the building. A bucket elevator transfers the plant feed to an oil-fired, 4- by 24-ft. Cleaver-Brooks rotary dryer that has a 30-t.p.h. capacity. Dryer discharge is raised in a bucket elevator to the top of a pants-leg chute, from which a pair of Allis-Chalmers No. 3 Pulverators are fed. Each of the latter is driven by an Allis-Chalmers 50-hp. motor, and the speed is varied in accordance with the size of the stone supplied to the plant.

Another Butler chain-bucket elevator raises the minus 4-mesh hammermill product to the sizing unit—an Allis-Chalmers 4- by 10-ft. triple-deck Ripl-Flo. With 8- 12- and 28-mesh screencloth on the top, middle, and bottom decks, respectively, this unit provides two grit sizes and dust. Material retained on the top deck is returned to the Pulverators, and then rescreened.

The grits and dust retained on the two lower screens, and passing the bottom deck, are separately chuted to the appropriate one of three 70-ton hoppers. For bagging of dust and barnlime, a screw conveyor trans-



The primary crusher shown here is reducing quarry-run stone at the rate of approximately 250 t.p.h.

The scalper (upper foreground) and the final screening tower (background). The short conveyor (right center) is used to introduce stockpiled stone into the secondary crushing and final screening flow.

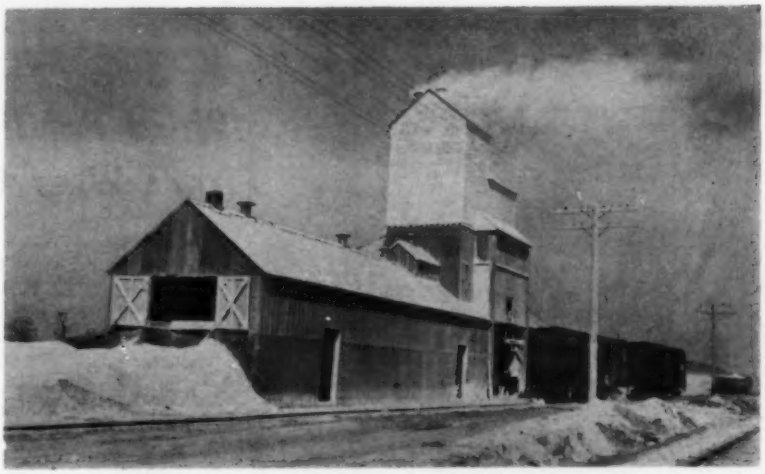
fers the material to a 2-spout St. Regis bagger. Plant products are shipped both in bulk and bags, and by truck or rail, the latter originating on a plant spur from the Soo Line Railroad. While the aglime plant operates on a year-round basis, during seasonal periods of high demand, production is maintained around the clock. Yearly output averages about 60,000 tons.

At one end of the quarry, previously mentioned, a crew of stone cutters is carrying out what is practically a lost art in modern industry. Virtually all of the Lannon, wall, and flag stones produced by the 19-man crew are cut by hand. Air hammers and electric saws are used to a minor extent, napping is done with a carborundum blade, and the balance is a hand operation. Shipment of products from this operation have been made into several neighboring states, and annual output ranges from 6,000 to 7,000 tons.

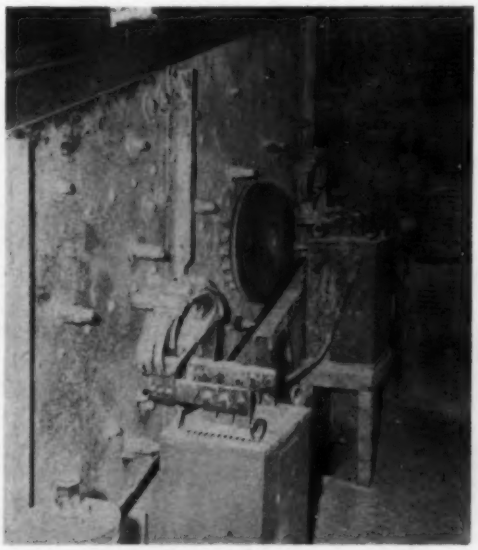
Headed by Clarence G. Wolf, president, Lloyd F. Wolf, vice-president and superintendent, and Florence Wolf, secretary-treasurer, this young organization has recorded an impressive growth. Its vigor is also emphasized by the fact that current plans for even further expansion through the addition of crushing and screening equipment for both the crushed stone and aglime plants will raise the present annual production of approximately 450,000 tons to well over 500,000.

GERALD POPPER has been appointed manager of advertising and sales promotion for Material Service Corporation, Chicago, Ill.

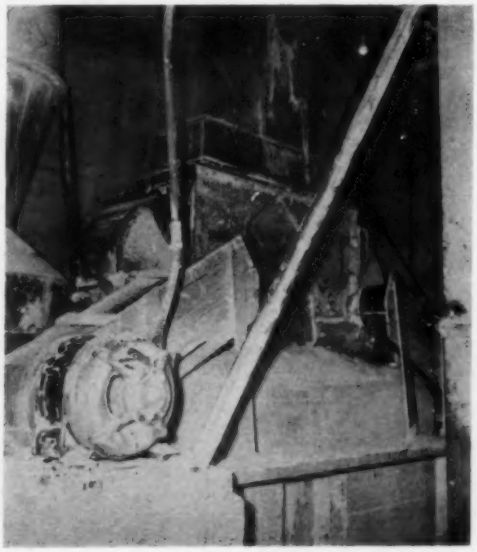
Stonecutting operations shown here are carried out at one end of the quarry, where thinly-bedded suitable stone has been reserved for that purpose.



Stone up to 2-in. size is drawn from stockpile or bins and trucked to this plant for production of aglime. The stone is dumped into a hopper (below the door at the left), from which the drier is fed.



Right: Dried stone is fed to these two hammermills and reduced to minus 4-mesh, after which it is elevated to a screen for separation into the various aglime products.



Left: This electrical installation at the first of the two final screens supplies heating current to the lower deck of that unit.

Historic California Area Site of New Silica Plant Of Owens-Illinois

Pit-run material received in the pit station hopper from the dragline bucket is water-pulped, pumped to a relay station, and then carried nearly a mile to the plant.

Third Facility Erected to Supply Firm's West Coast Glass Furnaces

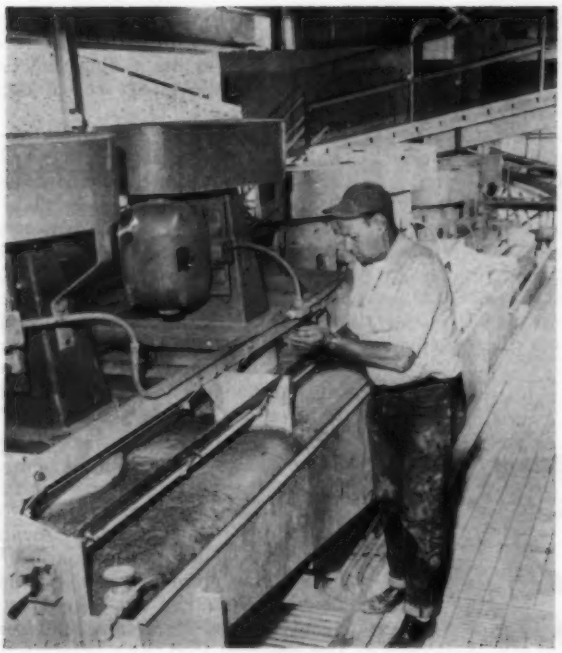
WATER from storied Sutter's Creek, once used to pan gold when thousands of fortune seekers plied California's goldfields, presently washes silica sand, a necessary ingredient to the glass industry, now being mined by Owens-Illinois at the firm's new sand plant in the vicinity of Ione.

The plant site—in the heart of the Mother Lode country, where some remnants of the roaring gold rush days can still be found—is several miles south of Ione and about 35 miles northeast of Stockton. It is the third such facility built by Owens-Illinois in California; similar plants are located at Corona and Pacific Grove.

The deposits at Ione, in a tract which Owens-Illinois subleases from Gladding, McBean & Company, consist of a mixture of clay and silica sand. When in 1953 the area was brought to the attention of company engineers, test borings were made to determine the extent and character of the deposit. According to Richard W. Heindel, manager of the firm's sand department on the Pacific Coast, this drilling program established the fact that there was a quantity sufficient to last 50 years at the present rate of withdrawal.

A pilot plant was built originally in order to test the quality of the sand and to determine the type of equipment that would be needed in construction of a wet mill for processing

An overall view of the Owens-Illinois sand plant near Ione, Calif. Classifying and flotation equipment are housed in the structure at the left. The dryer is visible in the center, and the 500-ton storage bins and car loading point at the right.

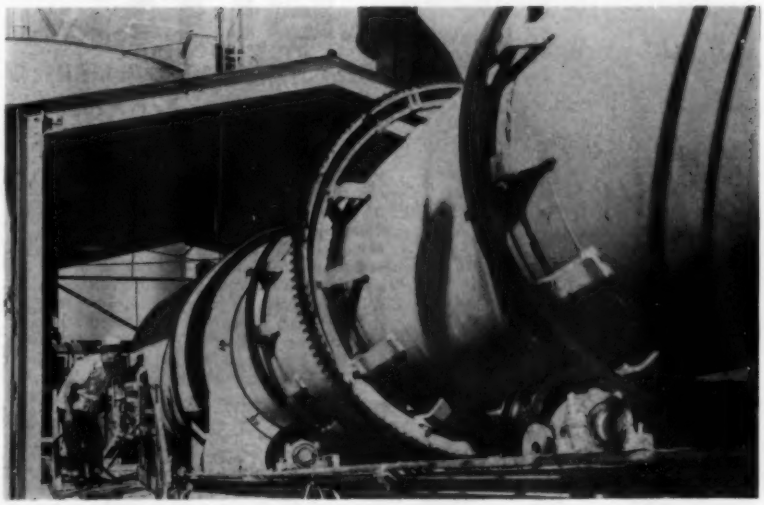


Left: An operator checks the flotation equipment, where iron contaminants are removed from the sand by frothing reagents.

Above: Richard W. Heindel, left, and Ben Bell inspecting discharge from the revolving scroll of the filter.

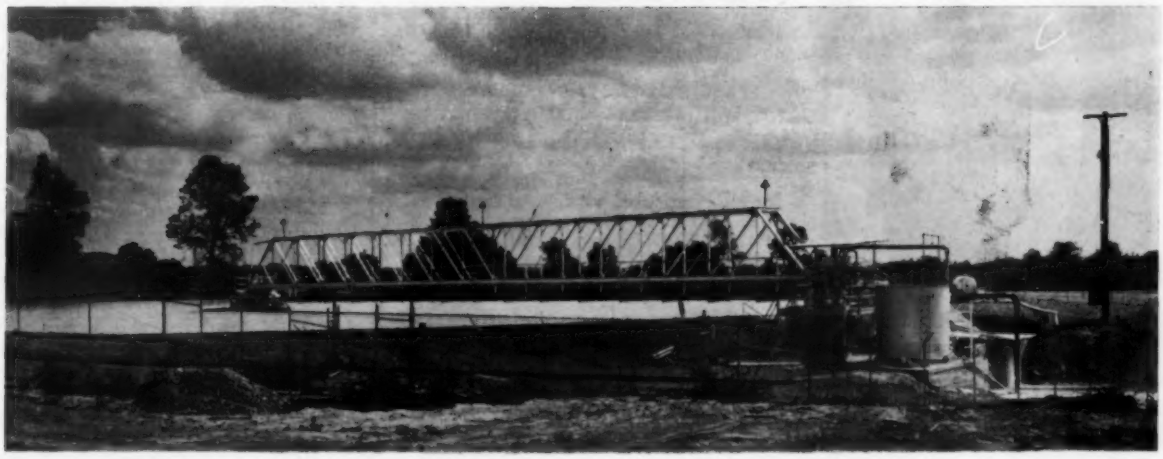
the material into a high-quality glass sand. The facilities now in operation involve cyclone separators, classifiers, flotation cells for the removal of clay and iron-bearing minerals, and filtering and drying equipment.

The operation of procuring silica sand to keep pace with a growing demand for glass containers on the West Coast begins in the mining area, located about one mile from the mill where the sand is processed.



Right: Prior to transport to the storage bins, the entire output of glass sand is dried in this oil-fired unit.

Below: The clay removed from the sand during processing is pumped to this 300-ft. dia. thickener from which reclaimed water is pumped to a reservoir.



Here bulldozers scrape over-burden from the surface to a depth of 35 ft., where the sand vein begins. In the sand pit a portable pit station is set up to receive pit-run material delivered by a dragline. The sand-clay mixture is discharged into a hopper over the pit station. Water from the mill reservoir is mixed with the sand and clay to form a slurry, which is then pumped from the bottom of the mining area to a relay station at ground level, about 400 yards away from the pit. This station performs booster work by pumping the slurry through a pipe, almost a mile long, to the wet mill for processing.

The slurry pumped from the mining area is emptied into a storage tank. Discharge from this tank is diluted to a suitable consistency for separation of the sand from the clay by Krebs wet cyclones. The slurry is forced into the cyclone by pressure, and the sand and the clay—because of their differences in density and grain size—are separated from each other by centrifugal force. Separation of the sand and clay is essential in order o obtain a silica product pure enough to produce a high-quality flint glass. A conventional Dorr classifier follows the cyclone process to complete the separation of clay from sand.

In a swirling mass of slurry, the sand is transported after each operation of water to another progressive step of purification. From the classifiers it moves upward on a conveyor belt to a sand conditioner. In the process of being transported on this belt it is weighed automatically by a Merrick Weightometer that will weigh up to 75 tons of wet sand an hour. At this point, the material retains approximately 20 percent moisture from earlier processing.

When the wet sand reaches the second floor of the mill, it passes through a conditioning unit and then into a flotation process. Reagents are here added to the slurry to provide a means of removing the iron-bearing minerals from the sand. In the Fagergren flotation unit the reagents create a mass of frothing bubbles. The resultant froth collects the iron-bearing minerals so that they can be removed by mechanical skimmers and pumped to waste. The pure sand discharges to a Dorr classifier for dewatering and removal of the last trace of clay.

After classifying, flotation, and a repeated classifying process the sand flows into an Oliver filter that removes more moisture. The sand is removed from the rotating filter by a revolving scroll which discharges it into a hopper on the first floor, then to a conveyor and onto another automatic weighing device. This second weighing process is the same as the first, except that here the sand is weighed after the bulk of the moisture has been removed.

Moving from the scene of the mill, the sand is conveyed to storage bins and then into a fuel oil fired Madsen Iron Works dryer where all moisture is driven off. It continues directly from the dryer to a cooler, so that the sand temperature is reduced to nearly that of the surrounding air. Finally the finished product is stored in 500-ton capacity steel storage bins to await loading into hopper cars for transport to the glasshouse.

The clay by-product is pumped to a 300-ft. dia. Dorr thickener for reclaiming of the water, which is returned to the mill reservoir. The clay fraction is raked to the center of the thickener later to be pumped to Gladding, McBean and Company's processing plant for further refining.

The Pacific Coast Division of Owens-Illinois maintains its head office in San Francisco, with company headquarters in Toledo.

SPANG

BLAST HOLE BITS

Drill More Holes Per Bit, At Less Cost Per Hole

SPANG CHURN DRILL BITS, famous for long life and economy in the drilling of blast holes for the fragmentation of minerals or overburden, drill *more-holes-per-bit* at *less-cost-per-hole,* because they are fully heat-treated from end to end and have the *extra strength in pin and blade sections* to stand up under the toughest drilling conditions. They are made with semi-dressed ends for quicker, easier finish-dressing, in High Carbon, A.I.S.I. 4340, and Spang Molloy Steel.

Available also, as an added economy, are SPANG REPLACEMENT BLADE SECTIONS in the same grades of steel, and uniform forge section, for welding to pin and collar sections of original bits when long service has worn the integral blade to a point where replacement is desirable.

Anyway you look at it, SPANG BITS are your best buy for more holes at less cost per hole.

SPANG REAMER TYPE PILOT BITS FOR DRILLING LARGE DIAMETER HOLES

Can be supplied in all sizes and in any practical weight.

For information on SPANG BITS, and FREE CATALOG of Complete Line of SPANG Cable System Drilling and Fishing Tools, consult your nearest Dealer, or write direct to:

SPANG & COMPANY

DEPT. M-3 BUTLER, PENNSYLVANIA

For over 60 years Manufacturers of Spang Weldless Jars and a Complete Line of Cable System Drilling and Fishing Tools for Oil and Gas Wells, Water Wells, Prospect Drilling and Shot Blast Holes.

Deductible or Non-deductible?

convention expenses of wives clarified

By HAROLD J. ASHE

THE expenses incident to a wife attending a business association convention or similar event continue to be non-deductible, usually, for purposes of calculating income tax. However, a spouse's convention expenses may be negligible in the light of a recent (April 23, 1956) ruling of the Internal Revenue Service. This ruling clarifies the formula by which certain joint expenses of both spouses may be calculated to determine the amount of expenses deductible for a business owner. Even the cost of other family members going along on the trip may be nominal, deductible business expenses considered!

When a wife or some other family member accompanies the proprietor of a business attending a convention or similar event, only the *transportation and lodging of the business owner* are deductible. However, the IRS ruling recognizes that the *single* fare for transportation and *single* rate for lodging are deductible, regardless of total transportation and lodging costs.

According to the ruling: "The amount deductible as an ordinary and necessary business expense on account of the transportation and lodging is the amount directly related to the business purpose of the trip, that is, the cost at the single rate for similar accommodations. The amount by which the total expense is increased because of the wife's presence and the entire cost of the wife's meals are not deductible."

Since double rates at hotels are usually only slightly more than single rates, this will make a wife's hotel accommodations negligible, and the bulk of the lodging bill will be tax deductible. When several members of the family accompany the person attending the convention, it may be possible to secure a "family rate" which is not much more than the double rate—even though not always available at the convention headquarters hotel.

Likewise, a convention trip by rail or air may be scheduled to take advantage of family rates, the single fare rate bearing the brunt of the total cost. The taxpayer's Pullman fare may absorb the major part of total Pullman outlay.

In line with the new ruling, the business expenses of traveling by car are fully deductible, regardless of how many travel in the car. These expenses include gasoline and oil, lubrication jobs, parking charges, and other items incident to the operation of the car for business.

The same IRS ruling re-emphasizes the non-deductibility of a wife's expenses "unless it can be adequately shown that the wife's presence on the trip has a *bona fide* business purpose." Her performance of incidental services such as occasional typing of notes or rendering similar services or accompanying her husband to luncheons or dinners does not qualify her expenses for deduction, the ruling specifically points out. "The performance of such services," says the ruling, "does not establish that her presence is necessary to the taxpayer's business."

The ruling also takes note of a practice in which a taxpayer makes a trip which is *primarily* personal. Even though he engages "in some incidental activity related to his business," the entire expenses involved must be treated as non-deductible personal or living expenses.

Brief or casual attendance at a business association convention very likely will be ruled personal if such attendance is made only incidentally to a personal trip, such as a vacation. Such brief attendance, perhaps at only one session, will not give even the color of business to a trip otherwise personal in nature. Likewise, dropping in on a supplier while on vacation will not satisfy the rule in respect to deductible expenses; even placing an order with a supplier will not alter the non-business character of the trip.

Nevertheless, attending a convention or a similar business event with his wife and/or other family members may represent a travel bargain for the taxpayer. The larger part of both transportation and lodging expenses may be tax deductible, with only a minor portion non-deductible. This is a travel inducement available to businessmen only in connection with a business association convention or other *bona fide* business travel.

In addition, a vacation may be combined with a *bona fide* (see earlier reference to casual attendance) convention trip or similar event so that expenses incident to getting to and from the convention site sharply reduce the vacation costs.

(*Continued on page* 138)

Mining Congress

(*From page* 83)

described in detail by R. H. Wightman, manager of mining. In 1927 the company established an underground block-caving system of mining its limestone requirements. Physical changes in the rock structure at great depths caused the mine to be shut down in February, 1954. Previous to this time a diamond-drilling program had been undertaken to determine the extent and value of the two known limestone beds. The stone in both beds is a crystalline, metamorphosed rock with varying amounts of brucite. Along the strike the beds are about a half-mile in length and they vary in thickness between the hanging wall and foot wall from 300 to 200 ft.

Results of the exploratory program convinced the company that methods utilizing large openings and the use of heavy equipment would be ideal for working the deposit, so the room-and-pillar method was adopted.

As a means of entry to open the new mine, the company built a 10 percent-grade road from the surface and descending along the foot wall of the old caved mine area. When solid rock was reached, the road was continued as a tunnel 30 ft. wide and 25 ft. high, the tunnel zigzagging, or spiraling, downward between the north and south limits of the deposit, still on a 10 percent grade.

Tunnel drilling is done with a 2-machine Rogers air-operated jumbo. Successive rounds of about 60 12-ft. holes with 500 lb. of dynamite are used to advance the tunnel, and the stone is carried to a Traylor 60- by 84-in. jaw-crusher which breaks to minus 8 in.

For the first cut, rooms cross-cutting the deposit, 60 ft. wide and 30 ft. high, are driven from the haulage way. Drilling is done with a larger 4-machine Ingersoll-Rand jumbo in much the same manner as that used to advance the tunnel. The rooms are being deepened by taking two additional cuts of about 30 ft. each, a horizontal pillar being left between each group of three cuts.

On completion, rooms will be 60 ft. wide and 90 ft. high, running the full width of the deposit!

As additional space is opened in the rooms, two Marion 93M 3-cu. yd. shovels with short booms and sticks load the 30-ton Kenworthy electric-powered trolley trucks which haul to the crusher.

Still another piece of interesting equipment especially adapted to use in the mine is a Pitman "Giraffe." In an extended position it can reach a height of 65 ft. to carry workmen who do scaling, roof bolting, and blasthole loading in areas that would be almost inaccessible by any other means. The "Giraffe" is mounted on a quarry truck chassis, with the truck cab cut away for maximum visibility. It is operated hydraulically from the truck engine and may be controlled either from the working platform or from the truck itself.

Planing Phosphate Rock in Montana In a paper prepared by T. E. Howard of the U. S. Bureau of Mines and F. E. Burnet of Montana Phosphate Products Company, the mining of phosphate rock by the planer method was described. Patterned after a German coal-mining device, the planer is a pneumatic- vibrating-blade, continuous mining machine which has been adapted to working the inclined beds of the rock. Operation of the machine at the company's deposit near Garrison, Mont., indicates that planer mining is feasible and affords many benefits.

Among these advantages are increased labor productivity, improved recovery, and safer working conditions. During one of the test periods, time studies showed an average production of 13 tons per man-hour and a maximum production of 30 tons per man-hour. For comparison, the average at the mine using the regular stooping method is 30 tons *per man-shift!* The elimination of the necessity for blasting leaves the walls in good condition, decreases the possibility of falling ground, reduces pillar requirements, and allows cleaner mining all around.

Gypsum, Limestone, and Dolomite The day of the small producer in the gypsum industry appears to be past, according to J. F. Havard, Fibreboard Paper Products Company, who spoke on the economics of gypsum deposits. All important deposits and manufacturing facilities are now in the hands of large, well integrated companies, the smaller producers confining their efforts to supplying crude ore to cement plants as retarder, or grinding the raw rock and marketing it as an agricultural soil conditioner. Chief factors in making a gypsum deposit economic, according to Mr. Havard, are an available market, low mining costs, cheap transportation to the point of use, good competitive quality, and adequate tonnage. Pitfalls in exploration were listed as interstratified impurities, anhydrite, structural problems, and subsurface solution.

California has suddenly mushroomed its production and consumption of limestone and dolomite to the point where, in 1955, about 12,000,000 tons of limestone and 335,000 tons of dolomite were used in mill products worth $113,000,000. So declared Oliver E. Bowen Jr., a geologist with the California Division of Mines, in a talk before the delegates. Currently, the state is seeking higher quality deposits of pure white limestone and dolomite for chemicals and fillers, iron-free stone for the glass-making industry, non-decrepitating limestone of high purity for the refining of sugar, and colored carbonate rocks for terrazzo chips and roofing granules. Large, hitherto undeveloped deposits were recently opened in southern Inyo County by the Westend Chemical Company and in Kern and San Bernardino Counties by several cement companies.

He declared that the recent purchase of the Santa Cruz Portland Cement Company by Pacific Coast Aggregates, Inc., of San Francisco may herald a new area of integrated concrete-materials manufacture and concrete fabrication.

Chain Systems—

(*From page* 104)

to cause flexure, so that the loops do not fill up with hardened slurry and the chains do not become a bar. Heavier chain lengths are also felt to be more effective in breaking up formations on the shell or lining.

Several changes have been made in suspension equipment for simplification of replacement. One interesting observation is the apparent trend away from the segment and yoke arrangement. Corrosion of the yoke and bolt have necessitated cutting the bolt to remove the yoke, with the result that if the corroded yoke is reinstalled, it may not draw the fingers down tightly enough to hold the end link.

(To be continued)

Natl. Safety Council Offers Safety Chief's Data Library

The *Safetyman's Library,* published by the National Safety Council, offers practical solutions to safety problems of many kinds. A collection of the best and most comprehensive safety reference materials available, the *Library* includes safety instruction cards, data sheets, safe practices pamphlets, detail sheets, and an accident prevention manual. Members of the National Safety Council may obtain the complete library, at a cost of $56 from headquarters at 425 N. Michigan Ave., Chicago 11, Ill.

It will pay you to **LEAP** *into this profitable new business...*

"LIGHTWEIGHT AGGREGATE"

...but LOOK first

HERE'S WHAT YOU SHOULD KNOW!

There are hundreds of different types of clays and shales—all with different bloating characteristics.

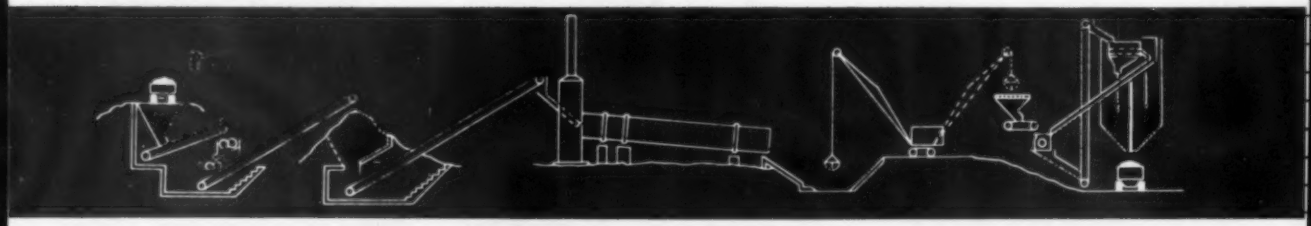
The selection of the process for preparing lightweight aggregate of the proper characteristics and size is determined by the raw material and must be made with care. McNally Pittsburg researchers, designers, and engineers have conducted a careful study of the best processing methods, and the design and construction of plants and equipment for the profitable manufacture and processing of lightweight aggregates in all parts of the country.

Last year there wasn't enough lightweight aggregate to "go around."

America's greatest Building Boom is just getting under way—and no end in sight for at least 10 years.

Builders and architects are fast turning to concrete and blocks made with lightweight aggregate!

That's why the wise operators are saying, "Let's get into a new business,'LIGHTWEIGHT AGGREGATE.'"



"Ask the men who know"

McNALLY PITTSBURG MANUFACTURING CORPORATION

DESIGNERS AND BUILDERS OF EQUIPMENT FOR BASIC INDUSTRY

COMPLETE PLANTS OR SINGLE MACHINES

Clay Disintegrators
Clinker Breakers
Conveyors • Coolers • Hoists
Jaw Crushers • Kilns
Roll Crushers • Vibrators
Apron and Reciprocating Feeders
Materials Handling Equipment

GET THIS FREE BROCHURE AND SPECIAL INFORMATION

McNally Pittsburg Mfg. Corp., Dept. P
Pittsburg, Kansas

Gentlemen:

Please send brochure on Lightweight Aggregate plants. ☐

Desired capacity of plant per day is _____.

Shale ☐ Clay ☐

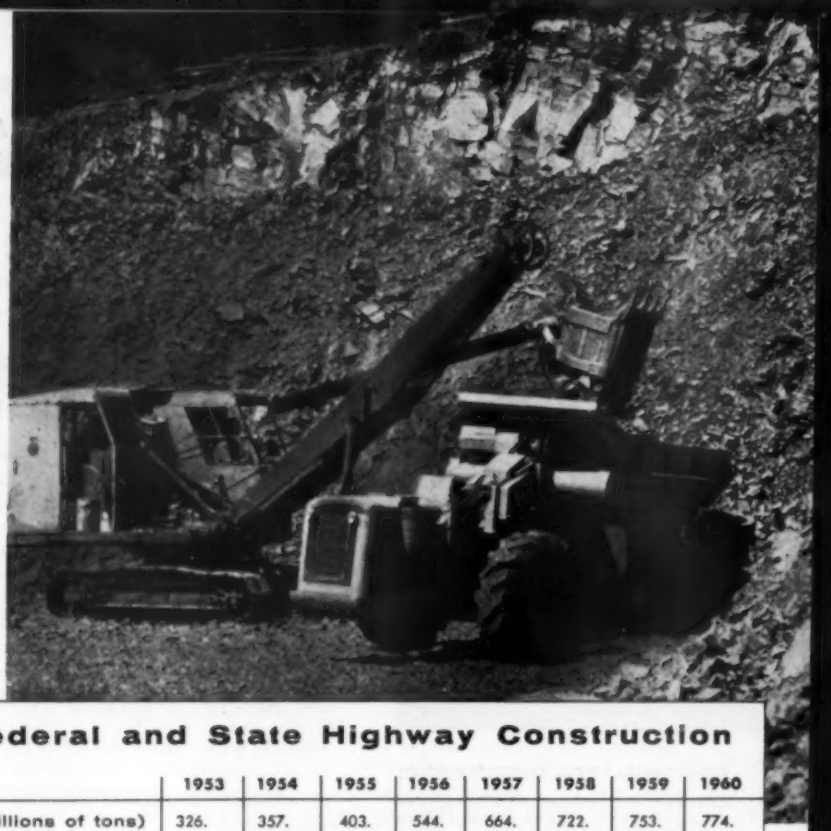
Name_____Title_____

Company_____

City and State_____

Is your equipment fleet ready

to supply next-year's roadbuilding?



Bill of materials—Federal and State Highway Construction

	1953	1954	1955	1956	1957	1958	1959	1960
SAND, GRAVEL, CRUSHED ROCK (Millions of tons)	326.	357.	403.	544.	664.	722.	753.	774.
CEMENT (Millions of barrels)	42.8	49.4	61.6	74.	94.5	102.9	107.4	110.5
REINFORCED CONCRETE PIPE (Millions of tons)	2.065	2.334	2.64	2.89	3.29	3.57	3.72	3.83
CLAY PIPE AND TILE (Thousands of tons)	38.	42.	47.	55.	67.	73.	76.	78.

Data: U.S. Department of Commerce, Bureau of Public Roads, as published by Business Week

With 13 years of tremendously accelerated roadbuilding added to the continuing expansion in home, industrial, utility and other construction, isn't it time to again review your equipment inventory?

Since your production base is your pit supply of raw materials, that may be a good place to start. At the plant your conveyors, classifiers, crushers, and concentrators are well organized to produce efficiently as they deliver your production requirements.

In the pit you are more likely to have stand-by losses while one piece of equipment waits to fit into the operation of the next. Tractors are waiting for shovels, shovels for trucks, or trucks are waiting for shovels. Meanwhile costs mount.

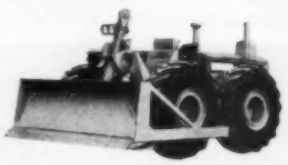
Perhaps we can help you with this problem of synchronizing these independently operated pieces of equipment for bigger production at lower unit costs. We are specialists in earthmoving, have contributed much to the earthmoving efficiency of your contractor customers by development of special high-speed, rubber-tired tractors, hauler prime-movers, scrapers, rear-dumps, graders, and allied equipment for movement of all types of materials excavated from the earth.

Rear-Dumps

These heavy-duty haulers, with kingpin connection between prime-mover and trailing dump body, are more maneuverable than rigid-frame dump trucks. Their flexible construction, plus cushioning effect of over-size, low-pressure, rock-grip tires, absorbs shock and strain. Simple dump mechanism eliminates all hydraulic elements. Rear-Dumps are available in 3 capacities; 11, 22 and 35 tons.

Adams Graders

Equally effective in pit clean-up or maintaining roads. Choice of five sizes: 60 to 150 hp; weight from 14,865 to 27,730 lbs. Heavy-duty models have 8 forward speeds (11 with optional "creeper" gears); 4 reverse speeds to match loads.

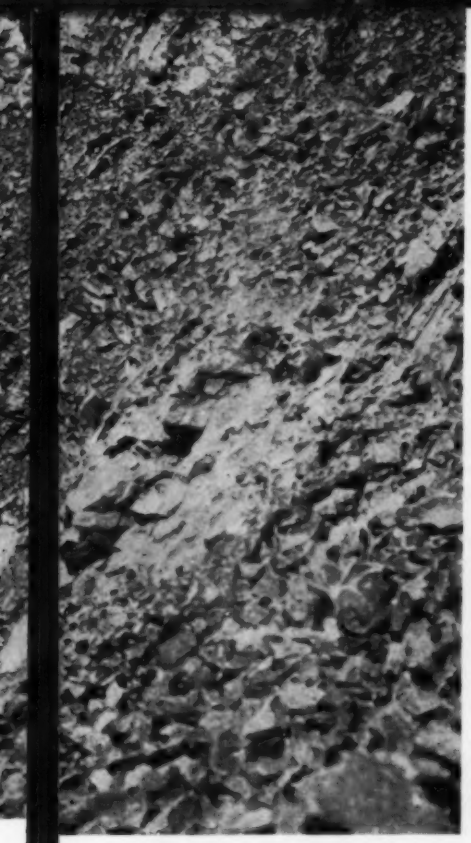


Tournatractor

Rubber-tired 208 hp tractor compares favorably in dozing work with crawler-tractors in its work range. Rig surpasses crawlers in mobility — can travel from job-to-job at speeds up to 17 mph — needs no assistance from trailers and special work crews. Tournatractor can do dozens of pushing or hauling jobs in and around the pit. With standard railroad coupler attached to rear, it's a SwitchTractor, spots railroad cars on your sidings.

Tournapulls

Self-propelled scrapers strip overburden, stockpile materials, fill washouts, build roads. Self-load, or may be push-loaded or shovel-loaded. Three sizes: 9, 18 and 25-cu. yd. capacity bowls; engines of 138, 208 and 293 hp electric controls.



How Federal Highway Spending Will Step Up

The following table from *Business Week* shows increase, by states, in Federal Aid over next three years. Note that the increase to 90% in Federal participation on Interstate System Roads, will mean availability of additional state funds for use on the state and local highway system.

(Fiscal Years, Millions of Dollars)

STATE	1956	1957	1958	1959
Alabama	17.8	40.5	51.5	58.1
Arizona	10.6	23.6	29.7	33.4
Arkansas	12.9	29.3	37.3	42.1
California	47.1	110.9	142.6	161.2
Colorado	13.2	28.9	36.6	41.1
Connecticut	8.0	18.9	24.3	27.5
Delaware	4.0	10.9	14.2	16.3
Florida	14.5	33.6	42.9	48.4
Georgia	20.3	46.4	59.2	66.8
Idaho	8.7	20.1	25.5	28.8
Illinois	39.0	91.7	118.2	133.3
Indiana	21.0	48.2	61.7	69.6
Iowa	18.9	42.0	53.0	59.7
Kansas	17.8	38.4	48.2	54.2
Kentucky	15.7	36.7	47.1	53.2
Louisiana	13.8	32.3	41.6	46.9
Maine	6.7	15.5	20.1	22.6
Maryland	9.5	22.7	29.6	33.5
Massachusetts	16.3	39.9	52.1	59.0
Michigan	30.0	70.5	90.4	101.9
Minnesota	20.7	46.4	58.5	65.9
Mississippi	14.0	31.9	40.5	45.6
Missouri	24.4	55.0	69.7	78.5
Montana	13.5	29.9	37.9	42.6
Nebraska	14.0	30.3	38.5	43.3
Nevada	8.7	20.3	26.0	29.4
New Hampshire	4.2	11.0	14.4	16.5
New Jersey	16.8	41.2	53.4	60.4
New Mexico	11.3	25.0	31.6	35.5
New York	56.1	135.1	174.7	197.7
North Carolina	21.1	49.7	63.8	72.0
North Dakota	10.1	22.8	28.5	32.2
Ohio	35.1	82.9	106.9	120.5
Oklahoma	16.6	36.8	46.6	52.5
Oregon	12.9	28.3	35.7	40.2
Pennsylvania	42.0	101.7	132.2	149.4
Rhode Island	4.9	11.9	15.3	17.4
South Carolina	11.3	16.3	33.7	38.0
South Dakota	10.8	24.0	29.9	33.7
Tennessee	18.4	42.3	54.3	61.2
Texas	52.4	117.5	149.0	167.8
Utah	8.4	19.2	24.7	27.9
Vermont	3.9	10.7	14.1	16.1
Virginia	16.8	39.4	50.8	57.4
Washington	14.1	32.1	41.1	46.3
West Virginia	9.6	22.8	29.6	33.3
Wisconsin	20.0	45.6	58.2	65.4
Wyoming	8.5	20.1	25.9	29.3
Hawaii	3.2	3.7	3.9	4.0
District of Columbia	5.1	12.2	15.7	17.7
Puerto Rico	4.8	5.7	5.9	6.2
Alaska	0	1.9	13.2	13.5

SwitchMobile

If you need a switcher that isn't tied to tracks, can travel direct to new car-spotting work over tracks, roads, or fields, yet is designed and built to meet all ICC specifications for switchers, the SwitchMobile can speed work and save money for you.

Powered by a 208 hp diesel engine, SwitchMobile, with its big rubber tires gripping tie-ends has the tractive power of steel-wheel switcher twice its size. Engine power is converted into 36,000 ft-lbs of rimpull — enough to start 1,250 tons of rail freight rolling.

SwitchMobile is equally fast forward or reverse, with speeds up to 16 mph. Operator can face either way with 180° visibility. Controls swing in half-circle, are always in front of operator. Rig can work in either direction with rail-coupler and air-brake connections on both ends of the machine.

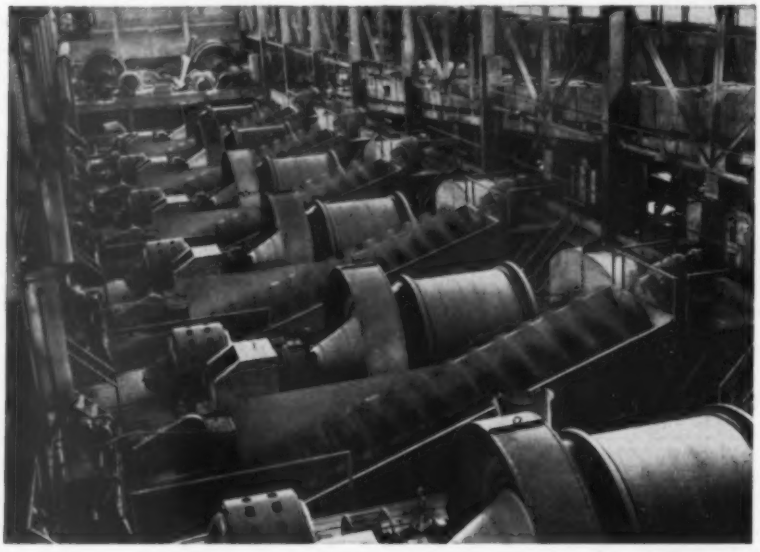
Adams, SwitchMobile—Trademark; Tournapull, Tournatractor—Trademark Reg. U.S. Pat. Off. G-1199-Q

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

ARBA See you at the ROAD SHOW • Chicago • January 28-February 2, 1957

CALUMET
NI-HARD* GRINDING BALLS



. . . Stand the Day-After-Day Grind

75% BETTER

In wet or dry grinding, Calumet Ni-Hard grinding balls offer maximum wear resistance. For instance, in exhaustive tests made in wet grinding of copper ore, they offered 75% greater wear-resistance than any other type of ball. For dry grinding, the wear life proved to be 4 to 1 better than that of forged steel balls.

Calumet Ni-Hard grinding balls have been thoroughly job-tested not only in Calumet and Hecla operations but in the mills of a number of other leading concerns throughout the country. The results invariably have been shown in greater efficiency and lower costs—benefits that can also be yours once you have used Calumet Ni-Hard grinding balls in your own mills.

A complete range of sizes is available to you: 5/8", 3/4", 7/8", 1", 1 1/4", 1 1/2" and 2". Let us send you complete information. Write TODAY.

**Reg. U.S. Pat. Off., Intl. Nickel Co., Inc.*

DIVISIONS OF CALUMET & HECLA, INC.
CALUMET DIVISION
WOLVERINE TUBE DIVISION
CANADA VULCANIZER & EQUIPMENT CO., LTD.
FOREST INDUSTRIES DIVISION
GOODMAN LUMBER CO.

CALUMET DIVISION
of Calumet & Hecla, Inc.
1 CALUMET AVENUE ● CALUMET, MICH.

Deductible or Non-deductible

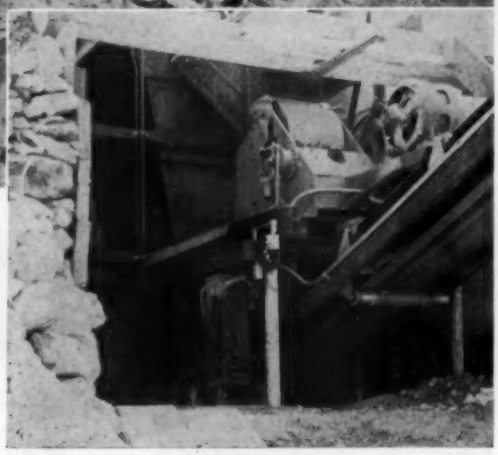
(*From page* 133)

Thus, a vacation either before or after the event may be taken either (a) in the convention area, (b) along the route going to or coming from the event, or (c) at a point more distant and beyond the event site and in a general direction farther away from the taxpayer's home. The taxpayer's expenses getting to the business event and returning by a direct route are tax deductible. The additional expenses incident to the vacation are not tax deductible, such as those traceable to additional time or mileage and circuitous routes. A separation of such expenses must be made, with the personal expenses traceable to a vacation not deductible—even those of the taxpayer.

Nevertheless, a taxpayer planning to spend a vacation in conjunction with, either before or after, a convention or other business event will be under far less personal, nondeductible expense than if he traveled to this same vacation area solely for a vacation. This circumstance may open up a vacation area otherwise financially less attainable.

However, any association-managed combined business and vacation schedule needs to be watched carefully. As a hypothetical example, IRS ruling points out: A taxpayer makes a business trip for the purpose of attending a convention held in a coastal (read any area) city. During the period of the convention he also engages in local sightseeing, entertaining, and visiting unrelated to his business. He also arranges to take a postconvention cruise (read any comparable arrangement) made available to individuals attending the convention, the purpose of which is primarily recreational, although some incidental sessions are scheduled for lectures, discussions, or exhibitions related to the business interests of the group holding the convention. The expenses paid for local sightseeing, entertaining, and visiting, and the entire cost of the postconvention cruise are deemed to represent non-deductible personal expenses."

With the recent completion of its new $250,000 sand processing plant near Willow Grove, Pa., the Mahoning Sand Company, West Pittsburgh, doubled its capacity to 250-300 tons of sand an hour. According to Dan Cowher, plant superintendent, the new plant was built to increase the company's market by expanding production.



Lowest cost crushing... choke feed Kue-Ken® Crusher produces entire run

This profitable, low cost plant is operated entirely with one Kue-Ken jaw crusher. It is practically a "one man" operation. The dozer feeds the load directly to the by-pass grizzly and to the "choke-fed" crusher. Kue-Ken operates at higher speed to provide 25% to 50% more capacity and a more cubical product. It is the lowest priced crusher per ton capacity. Power consumption is far less, breakage from overload is eliminated by automatic fly-wheel release that is quickly reset. Filtered oil lubricates the mechanism in a sealed, dust-tight crankcase to prevent wear.

WRITE FOR CATALOG

STRAUB MFG. CO., INC. • 8385 Baldwin St. • Oakland, Calif.

KUE-KEN® CRUSHERS

"CRUSHING WITHOUT RUBBING"

Jaw Crushers Gyratory Crushers Overhead Eccentric Crushers Revolving Screens
Classifiers Feeders Elb Cone Ball Mills Concentrating Tables Vibrating Screens

DEALERS:

SEATTLE, WASH.	Washington Machinery Co.
SALT LAKE CITY, UTAH	Lund Machinery Co.
SAN ANTONIO, TEX.	Closner Equipment Co.
PORTLAND, ORE.	Contractors Equipment Co.
LOS ANGELES, CALIF.	Garlinghouse, Fremon Co.
PHOENIX, ARIZ.	Stapley's
DENVER, COLO.	Union Supply Co.
CASPER, WYOMING	Moss Equipment & Supply Co.
VANCOUVER, B. C.	Universal Equipment Co.

Pennsylvania Crusher Division, Exclusive Licensed Eastern Manufacturer and Distributor, 323 S. Matlack St., West Chester, Penn.
Armstrong Whitworth (Metal Industries) Ltd., Authorized Licensed Manufacturer and Distributor. Close Works, Gateshead-upon-Tyne 8, England

POWER
BY
HERCULES...!

BAKER Industrial Trucks rely on . . . POWER BY HERCULES. These rugged trucks demand a compact, heavy-duty power plant. That's why Hercules Gasoline and Diesel Engines were selected as standard in Baker equipment.

The wide selection of Hercules Engines—over 90 models from 3 to 500 H.P.— provides a proper size of engine to meet your power requirements.

For power "tailored" to your needs, specify . . . POWER BY HERCULES.

HERCULES MOTORS CORP. • CANTON, OHIO

Industry Personalities

G. E. Elsenhans

G. Edward Elsenhans has been appointed technical service engineer of the Dragon Cement Company, New York.

Mr. Elsenhans was formerly associated with the Metropolitan Sand and Gravel Company, where he served as technical director, and the Universal Atlas Cement Company, where he held the post of technical service manager.

James V. Shook, associate engineer and supervisor of the laboratory maintained by the National Sand and Gravel Association and the National Ready Mixed Concrete Association at the University of Maryland, has resigned from this position to become materials laboratory chief of the American Association of State Highway Officials road test project in Ottawa, Ill.

Mr. Shook will supervise the testing of soils, sub-base and fill materials, and later also paving materials. He has been associated with the N.S.G.A.-N.R.M.C. research laboratory for the last seven years.

Richard D. Gaynor has been appointed associate engineer and laboratory supervisor to succeed Mr. Shook. He will be assisted by Herman Koppel.

Mr. Gaynor became associated with the laboratory while he was a student in the University of Maryland, and joined the staff on a full-time basis in 1954. Mr. Knoppel has been a laboratory technician for the last two years.

Dr. J. D. Clary has been named production superintendent of the Florida Phosphate Division of the Davison Chemical Company Division, W. R. Grace & Company. Dr. Clary, who has been with the company since 1951, was formerly assistant works manager at Curtis Bay, Baltimore.

A. V. Abnee has been appointed research manager of United States Gypsum Company's market research department in Chicago.

In Wisconsin . . . and the World Over

ROCK MEN RELY ON BUCYRUS-ERIE

The Sign of Profitable Production

A 4½-cu. yd. Bucyrus-Erie 110-B loads unusually hard granite and quartz in a Northern Wisconsin quarry.

Economical handling of heavy, abrasive rock, like the granite and quartz shown here, requires an extra margin of performance from the excavator assigned to the job.

In this Wisconsin quarry, as on rock jobs the world over, men who know quarry shovels rely on Bucyrus-Eries. They expect and receive the extra workability you need for profitable production. Reason: Bucyrus-Erie design and construction advantages have long been proved, as evidenced by the thousands of contractors using Bucyrus-Eries on every type of excavating operation.

For example, there's the extra strong yet light front end for steady, high output on the toughest job. There's responsive Ward Leonard electric control for fast acceleration and deceleration, speeded-up work cycles. Laboratory controlled, heavy-duty construction keeps maintenance costs low, adds greatly to machine life.

We will be happy to supply you with full information on this outstanding line of rock shovels.

85L56C

GLOBAL APPROVAL
MOROCCO · PHILIPPINES · RHODESIA · UNITED STATES · VENEZUELA · ALGERIA
INDO-CHINA · FRANCE · FINLAND · ENGLAND · CONGO · CANADA
110-B 4½-cu. yd.
150-B . . 6-cu. yd.
190-B . . 8-cu. yd.
BUCYRUS ERIE

Bucyrus-Erie Company

South Milwaukee, Wisconsin

WHERE SLY COLLECTS DUST IN CEMENT MILL OPERATIONS

CRUSHING

GRINDING

SCREENING

SEPARATION

FEEDING

CONVEYING

ELEVATING

PACKAGING

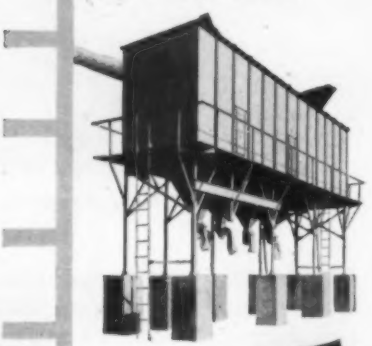
SILO FILLING

BULK LOADING

For all these operations SLY Dust Filters are in use in hundreds of cement plants in the U. S., Canada, Mexico, South America, Cuba, Puerto Rico, Greece, Israel and other countries.

Made in various types and sizes to fit air volumes and operating conditions, SLY Dust Filters *get all the dust.*

SLY has rendered engineering service to cement plants for over 35 years. This valuable experience is available to you. Let's discuss *your* dust problem.



***SLY*— the most widely used Dust Filters in the Cement Industry.**

Designers and Manufacturers of: Dust Control Systems, Blast Cleaning Equipment, Tumbling Mills, Industrial Ovens.

ASK FOR BULLETIN 98

THE W. W. SLY MANUFACTURING CO.

SINCE 1870

4745 TRAIN AVENUE • CLEVELAND 1, OHIO
OFFICES IN PRINCIPAL CITIES

Please send me your Bulletin 98

NAME.....

STREET.....CITY.....STATE.....

Obituaries

ELMER E. PYSHER, 66, was found dead by fellow employees at the Martins Creek, Pa., plant of the Alpha Portland Cement Company. Mr. Pysher, who had been employed by the cement firm for 39 years, suffered a heart attack while at work as plant foreman.

ABRAM BRAEN, who retired in 1946 as president of the Samuel Braen's Sons Company of Hawthorne, N. J., died recently after a short illness. Mr. Braen was 70 years old.

WILLIAM M. STONE, head of the N. P. Stone Company, died in Crookston, Minn., at the age of 80.

JOHN J. SULLIVAN, prominent in the marble industry in northern New York for many years, died in Gouverneur, N. Y. Mr. Sullivan had been associated with the Piedmont Marble Company.

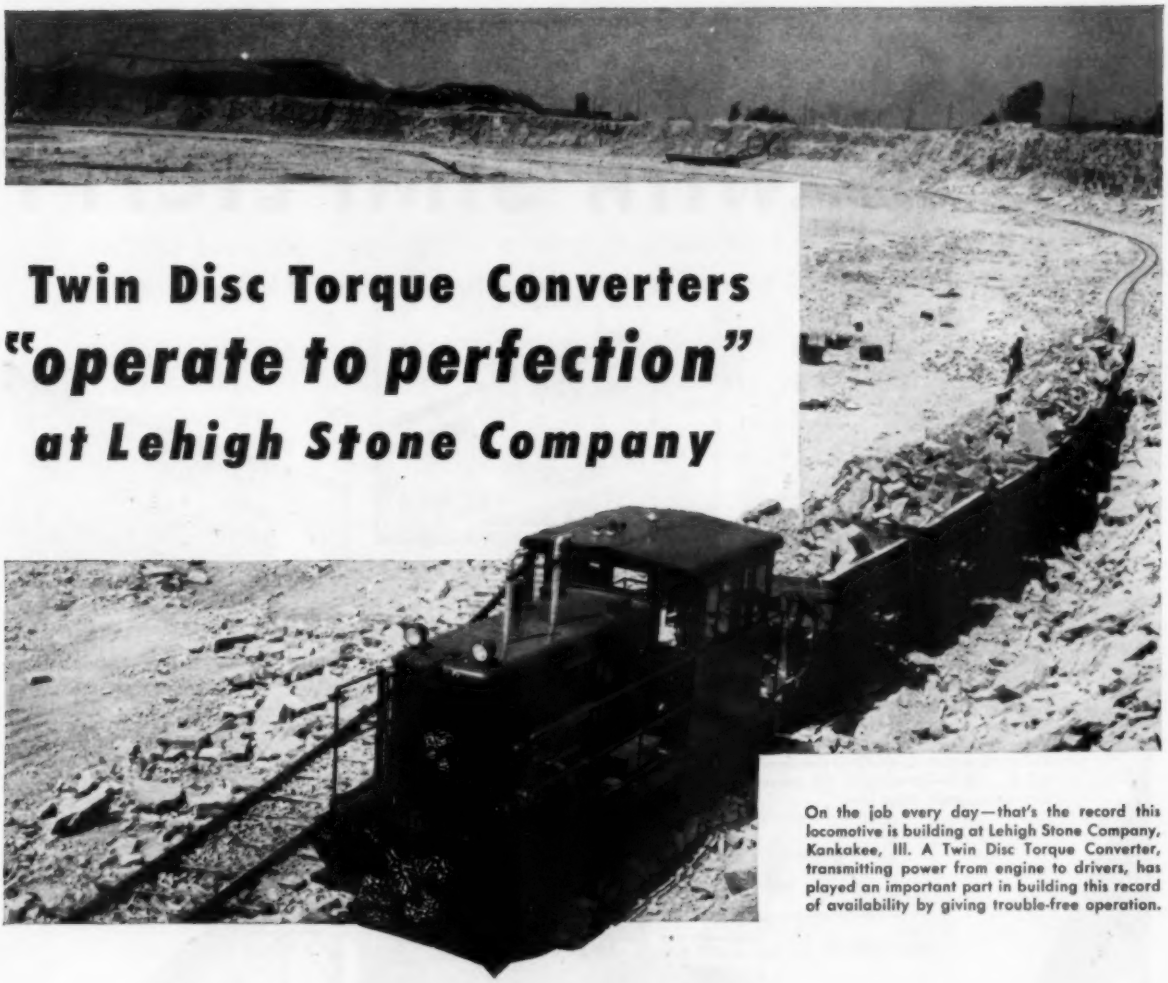
ORVAL R. PETERS, owner of the Peter Sand & Gravel Company of Blue Mound, Ill., died at the age of 55.

S. SIDNEY BUCKLE, retired manager of the Canada Cement Company, Ltd., died recently in Montreal.

HOWARD MCCUTCHEN THOMAS, president and chairman of the board of the Fort Scott Hydraulic Cement Company, died recently at Fort Scott, Kan., after a heart attack. He was 62 years old.

JAMES B. KENNEDY, who was for more than 20 years district sales manager for the Lehigh Portland Cement Company at its Philadelphia office, died unexpectedly last August. He had been associated with Lehigh for 33 years, and had retired on July 1. His first position was that of a sales department clerk in the Allentown office. Subsequently he became chief clerk in the Buffalo office, and in 1934 district manager in Philadelphia.

CHESTER N. REITZE, 73, retired president of Superior Portland Cement, Inc., died recently in Seattle, Wash., after a short illness. Mr. Reitze was associated with Superior Portland Cement for 30 years.



Twin Disc Torque Converters "operate to perfection" at Lehigh Stone Company

On the job every day—that's the record this locomotive is building at Lehigh Stone Company, Kankakee, Ill. A Twin Disc Torque Converter, transmitting power from engine to drivers, has played an important part in building this record of availability by giving trouble-free operation.

A re-built pit locomotive—powered by an International UD-24 Diesel Engine, driving through a Twin Disc Torque Converter—was the result of a modernization program, by Lehigh Stone Company, Kankakee, Ill., that ingeniously utilized components from worn-out steam-driven locomotives.

The original unit proved so successful that to date, four of these locomotives have been built. The result is a great saving in original cost over similar sized *new* locomotives, as well as a substantial reduction in operating cost, compared to steam.

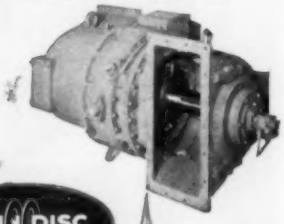
International UD-1091's, which replaced the UD-24's in later models, have identical dimensions, but provide more power and higher speed, which make them even more adaptable for use with the Twin Disc Three-Stage Torque Converters.

"The torque converters have operated to perfection, requiring no maintenance or repair other than changing oil and filter elements," states General Superintendent Delmor Groff. "In a recent haul test our tractive force was much better than expected."

Locomotive operators everywhere are finding similar results when Twin Disc Torque Converters are installed. Twin Disc Torque Converters permit smooth, fast acceleration . . . eliminate equipment-wearing shocks and stresses . . . provide maximum torque and tractive effort to the drivers—when needed most!

Specify a Twin Disc Torque Converter in your next locomotive or locomotive conversion. Take advantage of the many profit-making, cost-cutting features incorporated into Twin Disc Torque Converter Drives.

For complete details, write Twin Disc Clutch Company, Hydraulic Division, Rockford, Ill. Request Bulletins 135-E and 508 (three-stage and single-stage torque converters).



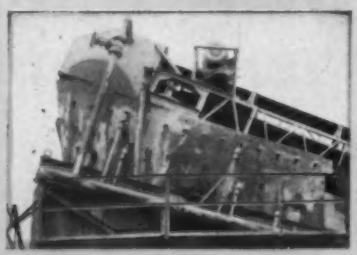
TWIN DISC
CLUTCHES AND HYDRAULIC DRIVES

TWIN DISC
Torque Converters

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin (Hydraulic Division) Rockford, Illinois

PROFIT THROUGH ...WITH SIMPLICITY

A 4' x 12' and a 4' x 10' Triple Deck Model D Gyrating Screen, set in tandem, performs a final washing and sizing operation. The washed gravel is fed to five storage bins, so that any specification can be met by blending on the conveyor belt underneath these bins.



This Simplicity 5' x 14' Two Deck Model D Gyrating Screen takes its feed from the raw material stock pile via conveyor. All decks have washing sprays. The three products produced of sand and gravel are fed by conveyors to individual stock piles.

Aggregate is carried right from the pit to this Simplicity 3' x 8' Model BG Heavy Duty Scalping Screen. Fines are screened through to the conveyor below, while oversize is scalped to crusher.

ACCURATE SIZING GYRATING SCREENS

4,500 tons of aggregate a day is classified by four Simplicity screens at Holly Sand and Gravel, near Holly, Michigan

Working two shifts of 9 hours each, the Holly Sand and Gravel Company is daily processing 4,500 tons of aggregate, and the firm's General Manager expects to exceed this total in the near future. All this material is sized on four Simplicity screens. Simplicity Model D Gyrating Screens and a Model BG Scalping Screen efficiently and accurately classify the aggregate into grades 10A, 6A, Pea Rock, Torpedo Sand, and Mason Sand. This fast and accurate sizing is typical of the performance of Simplicity Screens throughout the aggregate industry. In addition, a 3' x 6' Model C Single Deck Screen has recently been installed to produce 100% clean Pea Pebbles, by eliminating the buckshot. The Simplicity Gyrating Screen is the original type of mechanically vibrated screen using the counterbalanced eccentric shaft. The counterbalance is machined directly on the shaft, thus giving positive action with perfect smoothness.

Simplicity Gyrating Scalpers are heavy-duty machines built on the same basic principles as the Gyrating Screens, but with a grizzly deck to scalp off the oversize rock. These units are designed to withstand terrific impact. They perform two jobs at once by feeding the oversize into a crusher, and screening the fines.

Wherever you need fast, efficient scalping, screening, or feeding in your aggregate operation, Simplicity equipment can be a big help to you . . . write us today for complete information.

Simplicity
TRADE MARK REGISTERED

ENGINEERING COMPANY • DURAND 12, MICHIGAN

SALES REPRESENTATIVES IN ALL PARTS OF THE U.S.A.
FOR CANADA: Simplicity Materials Handling Limited, Guelph, Ontario
FOR EXPORT: Brown and Sites, 50 Church St., New York 7, N. Y.

182

IT COSTS NO MORE TO USE THE BEST

REPLACE WITH
"Indian Brand"

MANGANESE STEEL
Shovel Dippers
Dipper Teeth
Shovel Treads

Crusher Jaw Plates
Mantles—Concaves
Bowl Liners
Roll Shells

Pulverizer Hammers
Grate Bars—Breaker Plates

Ball Mill Liners
Screen Plates

The Frog, Switch & Mfg. Co. CARLISLE, PA.
ESTABLISHED 1881

Legal Decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

A certain quarry operator has inquired about the law regulating blasting in Colorado. He mentioned that a suit had been filed by his firm to defend against house owners in the vicinity who claimed that blasting had damaged their homes.

First, I shall explain that the higher courts in all states are not exactly in accord with liability for damages caused by blasting operations. Legal authorities in different jurisdictions are divided, some courts resting their opinions on the theory that to be liable for damages from blasting the operator must be shown to have been negligent; others declare that facts and circumstances of the blasting must be shown from which negligence may be presumed, or which bring the case under the doctrine of *res ipsa loquitur;* others say that the blasting operation must be shown to constitute a nuisance; and still others hold that blasting is an inherently dangerous operation in which the operator engages at his peril, making him an insurer liable for direct as well as consequential injuries therefrom.

Therefore, while a great majority of the state courts hold a quarry owner liable, without proof of negligence, for damages to nearby property owners, the law as already established by the courts in a particular state in which blasting operations were performed, must be determined before any one can anticipate whether or not a person who performs blasting operations is liable for injuries or damages to the owners of nearby dwellings.

Of course, as indicated above, in a majority of states, including Colorado, the courts hold that if blasting operations may naturally result in the injury of another, or the violation of his legal rights, the operator must at his peril see to it that such injury or such violation does not result. Otherwise the law expects him to respond in damages. This is true, regardless of the motive or the degree of care with which the blasting was performed.

For illustration, in *Cass Company v. Colton,* 279 Pac. (2d) 415, the higher court was asked to decide whether or not a stone quarry operator in Colorado is liable to home owners nearby if vibrations or concussions from the blasts of large quantities of explosives caused damage to their houses. The testimony showed that the operator actually did discharge large quantities of high explosives. One explosion on October 6 at its rock quarry caused considerable damage to several dwellings located one-half mile away.

After listening to all testimony the higher court decided that the damages to the homes resulted from the blasting operations at the quarry. Without any proof that the quarry owner was negligent in the blasting operations the higher court held the owner of the quarry liable in damages to the owners of the dwellings. This court said:

"This case involved alleged in-

Knowing the facts . . .
you'll choose Neff & Fry Bins

Super-Concrete Staves—virtually as hard and dense as natural stone—comprise the walls of Neff & Fry Bins (silos). The edges are tongued and grooved. The ends are diagonal so that surrounding hoops will impinge directly upon the horizontal joints.

Each stave is 10" wide x 30" long x 2½" thick. Note particularly the thickness. It means a Neff & Fry Bin has great interior capacity in relation to external diameter. It also means a substantial saving of cement compared to that used in thick-walled concrete bins.

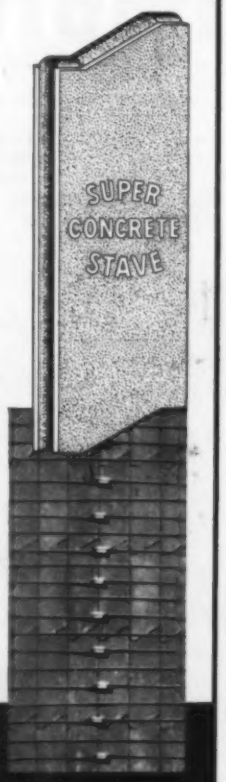
Because the staves have crushing strength of up to 8,250 psi, Neff & Fry bins carry heavy superstructures without additional supports—and that can save a large amount of construction cost.

Neff & Fry Bins don't rot, rust, spall, or burn. They never need face-lifting.

And these are just a few of the facts. If you knew them all, you'd certainly choose Neff & Fry Bins when you need facilities for handling and storing any kind of flowable bulk material. Ask us for complete information.

Not exported except to Canada and Mexico.

THE NEFF & FRY CO.
278 ELM STREET • CAMDEN, OHIO



SUPER-CONCRETE STAVE STORAGE BINS

Here Now! NEW CHEVROLET TASK·FORCE 57 TRUCKS!

FIRST with the MOST modern features

They're out to save you hours and dollars on any hauling job... and they've got big new power plus the modern features that make it a sure thing! They put you way ahead with time- and work-saving advantages you won't find in any other truck!

Again, for 1957, Chevrolet medium- and heavy-duty trucks bring you the industry's most advanced features—new developments that have already been proved in a history-making pre-announcement test run! (See below.)

For '57 there's bold new styling to match Chevy's remarkable stamina and dependability. There's fleet-action power in Chevy's outstanding engine line-up for '57—with the 195-h.p. Loadmaster V8 standard in all 9000 and 10000 Series trucks, and the sensational new 283-cu.-in. Taskmaster V8 (160 h.p.) standard in 5000, 7000 and 8000 series models.

Many models are equipped with bigger, brawnier rear axles. And there's a load of heavy-duty options for '57—including Chevy's revolutionary 6-speed Powermatic transmission, designed especially for heavy-load high-mileage hauling.

Be sure to check the new cab features, too . . . the handsome new upholstery, the new steering wheel, the new exterior colors. Your Chevy dealer has all the details, so see him soon! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

Alcan Highway Test Run Proves Chevrolet Ruggedness!

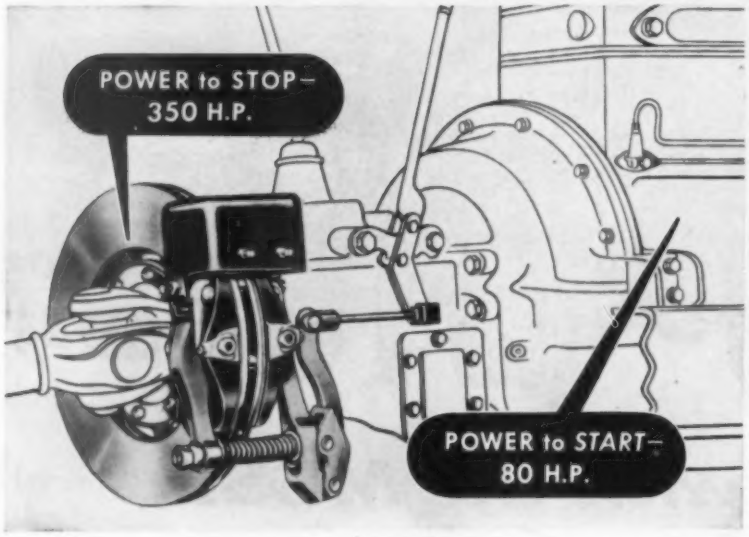
In an AAA-certified endurance run, 6 light-, medium- and heavy-duty trucks carrying typical cargoes roared up the 1,520-mile Alcan Highway (normally a 72-hour run) in less than 45 hours! In dramatic fashion, new Chevy trucks conquered one of the world's most challenging roads to display the great performance qualities they'll bring to *your* roads!

an ACCO product

It pays to specify

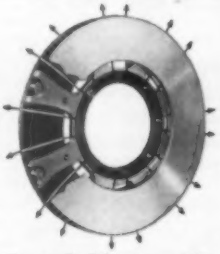
Tru-Stop Brakes

FOR LONG LIFE—EASY SERVICE



Have the surplus braking power emergency service requires

• In terms of horsepower, brakes actually do more work than the engine. For example:



Air-cooled for Long Life

• The terrific heat generated in braking shortens lining life. TRU-STOP design quickly dissipates this heat. Most of the disc is exposed to the air even during braking. And a jet of cooling air circulates between the disc blades and carries off heat.

Where it takes 80 H.P. to accelerate to 20 miles per hour, 350 H.P. is required to make a safe stop at that speed within required limits.

TRU-STOP Emergency Brakes have the surplus braking power required for emergency service. That is why they are more adequate for use as parking brakes.

TRU-STOP Brakes lower service costs, too. Relining or adjustment is a simple job for any mechanic with ordinary tools. It is not necessary to drop the drive shaft.

Specify TRU-STOPS for factory installation on the next vehicle you buy. Send for your copy of this booklet —the complete story of TRU-STOP Brakes.

ACCO

Automotive and Aircraft Division

AMERICAN CHAIN & CABLE

601 Stephenson Bldg., Detroit 2

2216 South Garfield Ave., Los Angeles 22 • Bridgeport 2, Conn.

juries by vibrations or concussions from the blastings. There is evidence that the blastings were inherently dangerous operations, and that injuries to nearby houses became apparent immediately thereafter. On the question of negligence, there is also evidence sufficient to sustain that the defendant operator was guilty of negligence in failing to foresee the natural consequences which might result from its blasting operations."

With respect to liability without proof of negligence, the higher court said:

"The facts and circumstances in the record in the instant case are sufficient to sustain the findings that the blastings were the proximate cause of the injuries and damages sustained."

For comparison, see the leading Colorado case of *Garnet Ditch Company v. Sampson*, 48 Colo. 285. This court said:

". . . the true rule of law is that the person who, for his own purposes, brings on his own land and collects or keeps there anything likely to do mischief must keep it at his own peril; and if he does not do so, he is *prima facie* answerable for all the damage which is the natural consequence."

In other words, the law in Colorado is in accord with a majority of states that any one who has on his property a dangerous enterprise or business shall be responsible in damages to owners of other property damaged by the operator. This is so, irrespective of whether or not testimony is given to the effect that the damage resulted from negligence of the operator. The higher courts in some states do not agree with this rule of law. For variations of the law in different states, see higher court decisions, as follows: *Whitman Corp. v. Elliott & Watrous Engineering Company*, 137 Conn. 562; *Brown v. Lunder Construction Company*, 240 Wis. 122; and *Pope v. Edward Rude Carrier Corporation*, W. Va. 75 S. E. (2d) 584.

Law of Res Ipsa Loquitur

Generally speaking, a quarry owner will not be held liable in damages for injuries to private property caused by blasting operations, breaking of its water lines, or other damage, unless negligence is clearly proved. However, last month a higher court held that a quarry owner may be liable without proof of negligence. This court held that where the thing which caused the damage is shown to be under the management of the operator, and the accident is such as in the ordinary course of things does

EIMCO 105 -- MORE POWER FOR MORE WORK

Eimco 105 Tractor-Excavators are balanced to give maximum work efficiency in every phase of digging and loading. Compare these figures—(A) 39,200 pounds of digging force at the bucket lip as the 105 moves into the rock pile; (B) 39,200 pounds of lifting capacity for breakout power.

This power gives the operator the same potential in productive capacity as he would have if you bought him a boom type shovel costing three to four times as much.

How does Eimco design a small (1½ yard) Tractor-Excavator to outproduce every other machine in its price range?

The answer to this is Eimco's unique Tractor design which provides better balance, lower center of gravity and delivers full engine horsepower to the bucket at all times.

Eimco also makes it easier to operate the 105 Tractor-Excavator. The operator sits up front where he can see what he is doing. Two small handles, easily held in one hand, control all movements of the Tractor. The operator does more work with less effort, stays efficient the entire shift.

Other firsts in the Eimco 105 Tractor-Excavator include (1) independent track control so that one track can be run forward while the other turns reverse; (2) separate final drives for each track; (3) full track oscillation on the tractor when equipped with loading or excavating attachment; (4) elimination of master clutch and drag-track steering; (5) Unidrive transmission in which gearing always rotates in the same direction; (6) all alloy steel construction; (7) clutches that never need adjustment — and many other exclusive features.

See these completely new tractors as Bulldozers, Excavators or Loaders working near you. Write for complete information.

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Tex. Birmingham, Ala. Duluth, Minn. Kellogg, Ida. Baltimore, Md. Pittsburgh, Pa. Seattle, Wash. Cleveland, Ohio Houston, Texas Vancouver, B. C. London, England Gateshead, England Paris, France Milan, Italy Johannesburg, South Africa

EIMCO

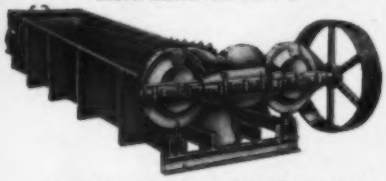
B-222

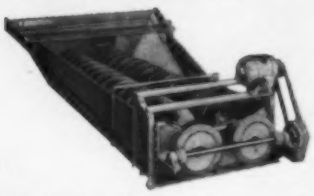
Specify
McLANAHAN
EQUIPMENT
for dependable
low-cost
FEEDING,
CRUSHING,
CLEANING in
PITS, MINES
and QUARRIES

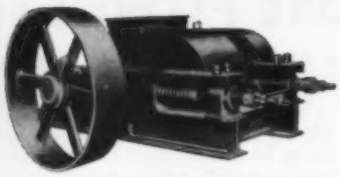
A pioneer in the development of many types of processing equipment, McLanahan has served domestic and foreign pits, mines and quarries for more that a century. Shown are a few illustrations of McLanahan equipment for crushing, washing, sizing and conveying all types of ore, rock, coal and other materials. Technical details and price information will be sent upon request.

All Steel Rockmaster Single Roll Crusher for primary or secondary work on shovel loaded rock and ore.

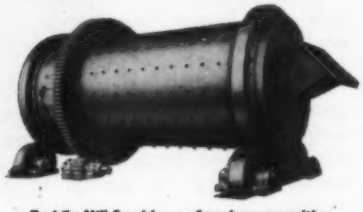
Heavy Duty Reciprocating Plate Feeder. Handles any materials from sand sizes to shovel loaded rock and ore.


Log Washer for removing tough clay and soft rock from various materials.


Double Screw Washer (with gear cover removed), for dewatering, classifying and removing waste from sand, limestone and other materials.


Heavy Duty Fabricated Steel Double Roll Crusher for secondary reduction of rock and ore.

Double duty combination Scrubber and Sizing Screen for large and small capacities.


Paddle Mill Scrubbers of various capacities for cleaning large size feed.

write today for complete information

McLANAHAN & STONE
CORPORATION
PIT, MINE AND QUARRY EQUIPMENT HEADQUARTERS SINCE 1835
233 Wolf Street, Hollidaysburg, Pennsylvania

not happen if those who have the management use proper care, this testimony affords reasonable evidence that the accident arose from "want of care." This rule of law is known as the doctrine of *res ipsa loquitur.* See *Anello v. Kansas City,* 286 S.W. (2d) 49. This court said:

"The doctrine of *res ipsa loquitur* is a rule of evidence and applies only when the facts are such that the court can and will take judicial notice that, unless negligence had been present in some form, the injury would not have occurred."

Hence, in cases involving this doctrine any person, firm, or corporation may be held liable in damages without proof that the injury or damages were caused by the party against whom suit was filed.

Of course, in all legal controversies involving injuries the law as laid down by prior higher courts is important.

For example, in *Brown v. Homer,* 23 So. (2d) 348, the testimony proved that gross negligence of the driver of an army truck caused it to collide with a concrete truck, seriously injuring its driver.

In view of fact that the army truck was the property of and being operated by the United States Government, the higher court held the owner of the other concrete vehicle solely liable in $15,300 for injuries sustained by its driver and said:

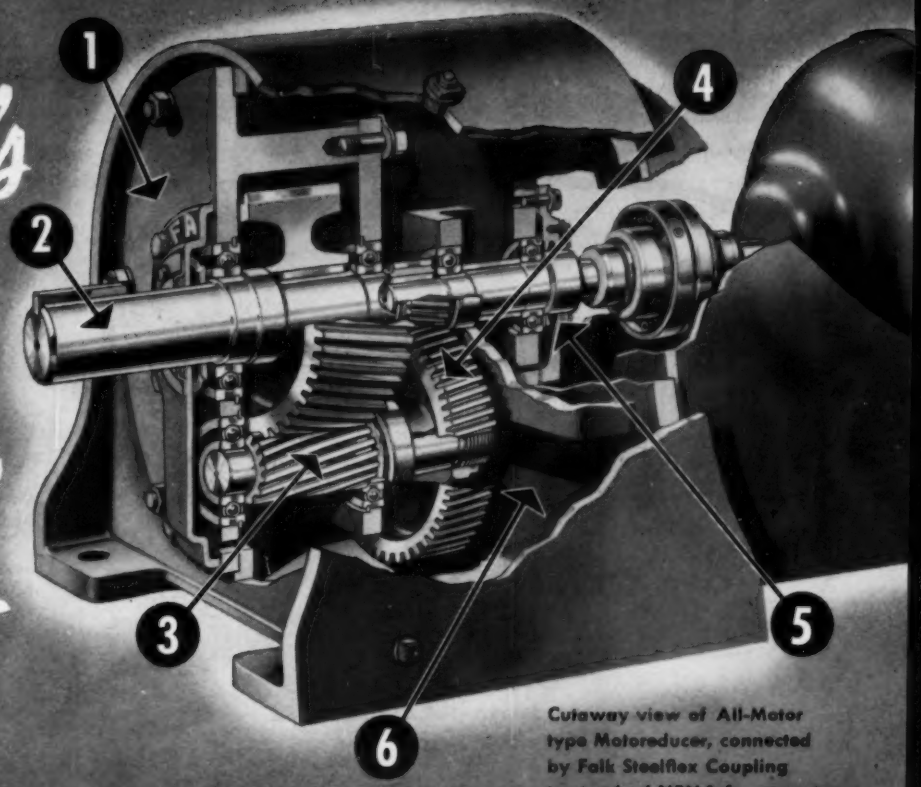
"The gross negligence of the driver of the Army truck is definitely and incontrovertibly established, but in view of the fact that the said truck was the property of and was being operated by the Government of the United States, protected from suit in a tort action by virtue of sovereignty, the defendants in this suit must of necessity bear the full brunt of the action against them as joint tort feasors."

Mutual Mistake Law

Modern higher courts consistently hold that where the testimony shows that both controlling parties are mutually mistaken as to the obligations assumed under a contract, such contract is automatically rendered void and unenforceable.

For illustration, in *Petrey v. John F. Buckner & Company,* 280 S.W. (2d) 641, the testimony showed the following facts. A contracting company took a contract with the U. S. Government to do certain work on what was known as the Benbrook Dam, including the construction of roads and the placing of road base gravel in accordance with specifications prepared by the U. S. Corps of Engineers. Later one White made

Here's the inside story—



Cutaway view of All-Motor type Motoreducer, connected by Falk Steelflex Coupling to standard NEMA frame motor

WHY Falk Motoreducers give better service—have longer life

Here is the "inside story" behind the all-steel All-Motor type FALK Motoreducer's universal reputation as a gear drive unmatched in quality, efficiency, dependability, ease of maintenance and long life. These "In-built" factors are—

1 **ALL-STEEL HOUSINGS.** Rugged, strong, rigid...all parts are manufactured from heavy steel plate, formed and welded in the Falk Weld Shop.

2 **LARGE OVERHUNG LOAD CAPACITY.** Large shafts, oversize bearings...rigid mountings with wide bearing spans to handle maximum applied loads.

3 **PRECISION GEARING.** Heat-treated alloy steel gearing, precision cut and shaved after heat treatment to eliminate distortion. Quiet, crown-shaved pinions.

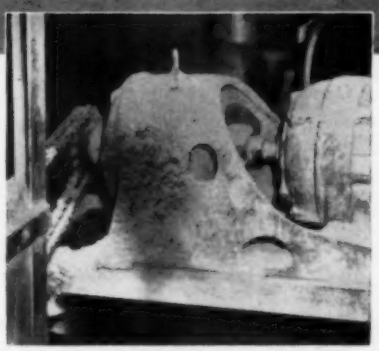
4 **EXTRA-CAPACITY GEARING.** Special extra-capacity gear-tooth form with larger contact area gives greater strength, higher load-carrying capacity.

5 **SEALED HOUSINGS.** Splashproof, dustproof, oil-tight construction. Dual closures and one-way vents keep oil in, dust and moisture out.

6 **POSITIVE LUBRICATION.** Large sump capacity...oiltight construction assures clean lubricant...revolving elements lubricated by direct dip.

When you buy or specify the All-Motor type FALK Motoreducer, you get all these—plus the tremendous advantage of full interchangeability of motors. Switch motors as desired—use any make, style or type of standard foot-mounted motor within the unit's AGMA rating—with a minimum of difficulty or "down time."

Available in sizes up to 75 hp—*with or without motor*—from convenient factory, field or distributor stocks, from coast to coast. **Write for Bulletin 3100.**



60,000 HOURS WITHOUT A FAILURE!

Sixty thousand hours is a lot of hours—but the FALK Motoreducer in the unretouched photo above has served that long without failure or need of repair.

This 3 hp unit is one of over 60 FALK Motoreducers in daily service in an Eastern plant of a large milling company, whose president says, in part:

"One of the main advantages of FALK Motoreducers is their adaptability to any motor. Reducers and motors can be easily interchanged....Our service records confirm the wisdom of our choice of FALK equipment as our standard."

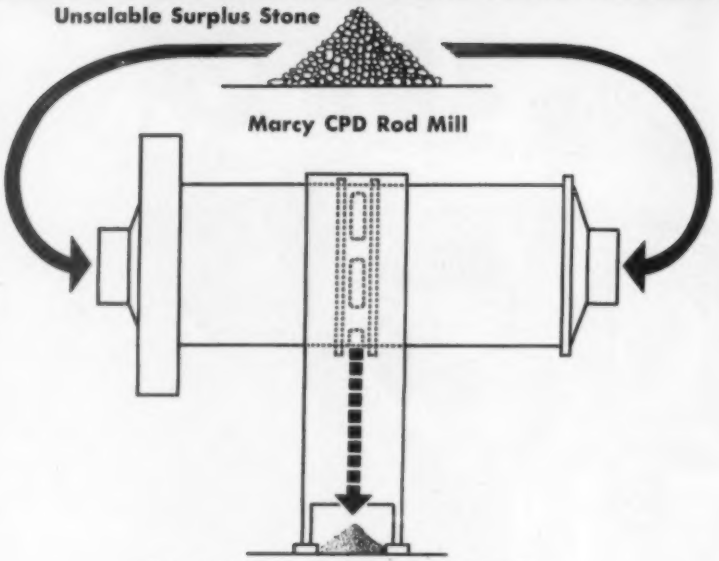
FALK ...a good name in industry

THE FALK CORPORATION, MILWAUKEE, WISCONSIN

MANUFACTURERS OF

- Motoreducers
- Speed Reducers
- Flexible Couplings
- Shaft Mounted Drives
- High Speed Drives
- Special Gear Drives
- Single Helical Gears
- Herringbone Gears
- Marine Drives
- Steel Castings
- Weldments
- Contract Machining

Turning stone into dollars



Flexibility of Marcy CPD Mills Permits Production of Concrete, Mortar, or Asphalt Sand

Operating Advantages—Compared with crushing, experience has proved these additional advantages of grinding by Marcy CPD Mills:

Low Cost—low maintenance, less steel consumption and less power per ton result in an overall cost generally less than 25c per ton, exclusive of ammortization.

Flexibility—by varying rate of feed, pulp dilution, and discharge port area it is possible to change gradation of finished product to meet different specifications.

Wet or Dry Grinding—on dry grinding moisture content is not as critical as with other type crushers.

Cleaner Operation

Capacities—from 2 to 200 dry tons per hour

Marcy Center Peripheral Discharge Rod Mills have been earning profits for sand and gravel operators since 1925. Let our engineers, experienced in manufacture of sand, assist you on your problems.

WRITE FOR CATALOG

The Mine & Smelter Supply Co.
DENVER 17, COLORADO

*Both Marcy and Massco are registered trademarks.

a contract with the contracting company to furnish all equipment, labor, and supplies necessary to load and haul the amount of road base gravel required under the company's contract with the government from the gravel pit on the government-owned property for 50 cents per cubic yard, such work to be done in accordance with the specifications of the government engineers.

Some time after this contract was signed, White discovered that the road base material which could be produced from the government-owned property would not meet the specifications of the U. S. Engineers.

In subsequent litigation the higher court refused to hold White liable in damages to the contracting company, and said:

"As a general rule, a mutual mistake as to a material fact is a ground for avoiding a contract. Therefore, the contracting owner and defendant (White) are each relieved from any liability to the other by reason of the written contract here sued upon because the contract was entered into as the result of a mutual mistake of a material fact which related to the subject matter and essence of the contract."

Not Within Bankruptcy

Many persons erroneously believe that a discharge in bankruptcy eliminates all debts. However, this is not true. For example, a debt or a judgment for "malicious" injuries to a person is not rendered void by bankruptcy proceedings.

For illustration, in *Saueressing v. Arm*, 16 N.W. (2d) 417, it was shown that the driver of a motor truck was in a drunken condition when in disregard of the safety of others he seriously injured a pedestrian. The injured pedestrian sued the truck driver and his employer for heavy damages. The court awarded a judgment of several thousand dollars in favor of the pedestrian against the driver. The truck driver took benefit of bankruptcy, believing he could avoid this money judgment. Later the injured pedestrian filed a garnishment suit to collect the judgment from the truck driver's wages.

The driver appealed to the higher court on the contention that his discharge in bankruptcy eliminated all his past debts. The higher court refused to agree with this contention, saying:

"It could hardly be contended that a judgment for death by wrongful act would be discharaged by a discharge in bankruptcy."

Also, see *Tinker v. Colwell*, 193 U. S. 473, where the Supreme Court

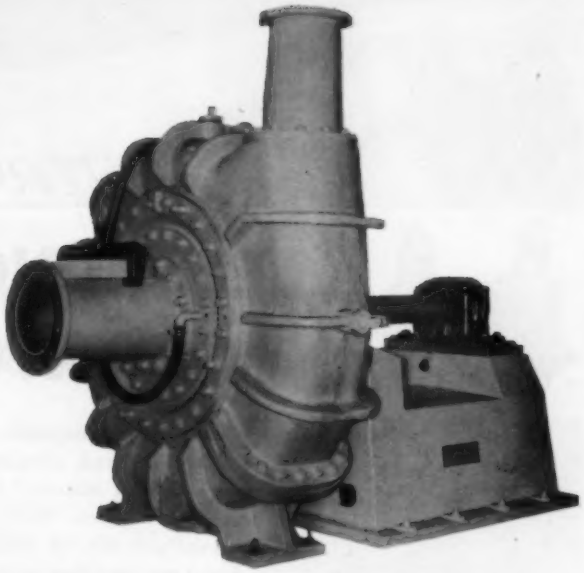
CUSTOMER ACCEPTANCE

THOMAS

DREDGE PUMPS NOW ARE

SELLING

Themselves!



Times change. Sale of a THOMAS DURABLE DREDGE PUMP is different from what is used to be. After installation of hundreds of THOMAS PUMPS in all sections of the Country, and several years of almost unbelievable performance, sand-and-gravel men now ask for THOMAS PUMP installations.

Several years ago, the average pump user often said: "Your pump looks good. But I don't know Thomas Foundries, and never heard of a Thomas pump. I can't afford to experiment. Let some one else try it."

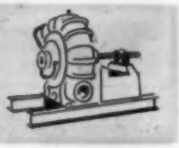
Recently, a sand-and-gravel operator in a nearby state sent us an inquiry. He said: "We have been using Manganese Steel Pumps, but we want a THOMAS PUMP on our new dredge. Send us information on power requirements, speed, capacity, etc."

When we telephoned him long distance, offering to send a Thomas engineer to see him, he said: "No need to send an engineer. You don't need to sell me a THOMAS PUMP. I've sold myself by hearing trade gossip and pump conversation from other sand-and-gravel producers for the past 3 or 4 years. Just send me the data I asked for, and I'll send you an order." This 12" x 10" pump will be shipped shortly!!

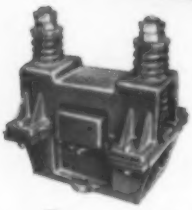
THOMAS PUMP performance is due to its unique design and the dependable genuine "Thomas" NI-HARD alloy from which the pump is made. *Write for details.*

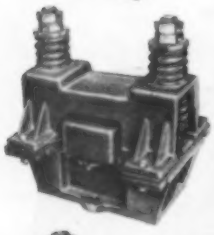
[YOU CANNOT BUY, AT ANY PRICE, A MORE DURABLE PUMP FOR SAND AND GRAVEL—YOU CANNOT BUY ONE THAT WILL MAKE YOU AS MUCH MONEY.]

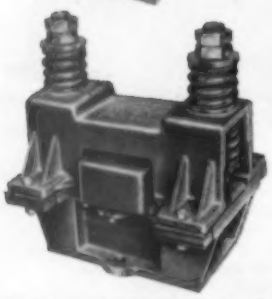
THOMAS FOUNDRIES Inc.



P. O. BOX 1111, BIRMINGHAM, ALABAMA







Apply

SYNTRON

ELECTRIC VIBRATORS

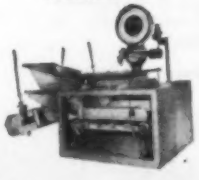
Syntron Electromagnetic Vibrators prevent arching and plugging of even the most stubborn material in bins, hoppers and chutes. Their 3600 controllable vibrations per minute eliminate the need for poking, rodding and sledging. Electromagnetic drive eliminates wearing parts that require maintenance. Available in models and sizes for any bulk handling installation.

Other SYNTRON Equipment of proven dependable QUALITY

SHAFT SEALS

GRIZZLY FEEDERS

WEIGH FEEDERS



Write for complete Catalogue—Free

SYNTRON COMPANY

385 Carson Avenue Homer City, Penna.

of the United States held that willful and malicious injury does not necessarily involve hatred or ill will, but arises from a wrongful act without just cause or excuse. Further that bankruptcy does not discharge or eliminate such debt.

Sudden Peril

Generally speaking, violation of a state statute is negligence which renders the violator liable. However, this is not always the case; an exception to this usual law comes under the "sudden peril" rule. In other words, where one is suddenly confronted with an emergency in which his own safety is imperiled, and when such a sudden emergency is created by the unlawful act of another, the failure to act in such a manner as would conserve his own safety does not necessarily establish negligence or contributory negligence in law. However, definite proof must be given to relieve an apparently negligent driver of a motor vehicle from liability.

For instance, in *Ponce v. Service,* 152 Pac. (2d) 234, it was shown that an automobile and a gravel truck were involved in an accident which happened about midnight. Two members of the Highway Patrol reached the scene of the accident shortly after it happened. In their testimony the course taken by the vehicles, as shown by tire marks, showed that the automobile was on the left side of the highway at the time of the accident.

The higher court rendered its decision on the evidence presented by the Highway Patrol to the effect that the driver of this automobile was not presented with a sudden peril which justified his being on the wrong side of the highway.

Therefore, the higher court held this driver liable, saying that the evidence did not prove that he had any legal reason to be on the wrong side of the highway.

Night Driver's Negligence

Recently I received a letter from a reader who wants to know the general rule as to when the driver of an automobile is liable for a collision occurring at night. A few weeks ago I located a higher court decision which clearly answers this question.

In *Hickerson v. Jossey,* 283 Pac. 1119, a higher court clearly explained the duty of a motor-truck driver, and instructed a jury, as follows:

"If you find that a reasonably careful and prudent driver, under all of the conditions prevalent at the time this collision occurred, in the exercise of ordinary and reasonable care and caution, would have had

HOUSE ROLLS are automatically built up with 2 or 3 passes of Stoody 104.

How one of the country's large contracting firms MAINTAINS SHOVEL PARTS

The shovel parts illustrated here are typical of those regularly rebuilt and hard-faced by George M. Brewster and Son, Inc., famous for the big jobs handled, such as the New Jersey Turnpike and approaches to the George Washington Bridge. Standard maintenance practice includes complete restoration of worn house rolls, buckets, bucket teeth, pads and tumblers.

After rebuilding, the Stoody 104 deposit is machined to original size. This is one of the few parts requiring machine work. Others go into service "as-welded."

In the Brewster operation Stoody Hard-Facing Alloys are used for both manual and automatic applications. They help to keep equipment in service longer between repair periods and reduce the number of replacement parts that must be stocked. Life of rebuilt parts is invariably equal to or greater than the original equipment—yet the cost of rebuilding and hard-facing is but a fraction of new part costs.

Procedures followed here and by other major earth-moving contractors are described in detail in the Stoody Hard-Facing Guidebook and other Stoody literature; consult your Stoody dealer (see the "Yellow Pages" of your phone book) or write direct for full information.

WORN SHOVEL PADS. Conventional treatment includes rebuilding worn areas with Stoody Manganese and manually hard-facing with Stoody 1027.

OTHER SHOVEL HARD-FACING APPLICATIONS

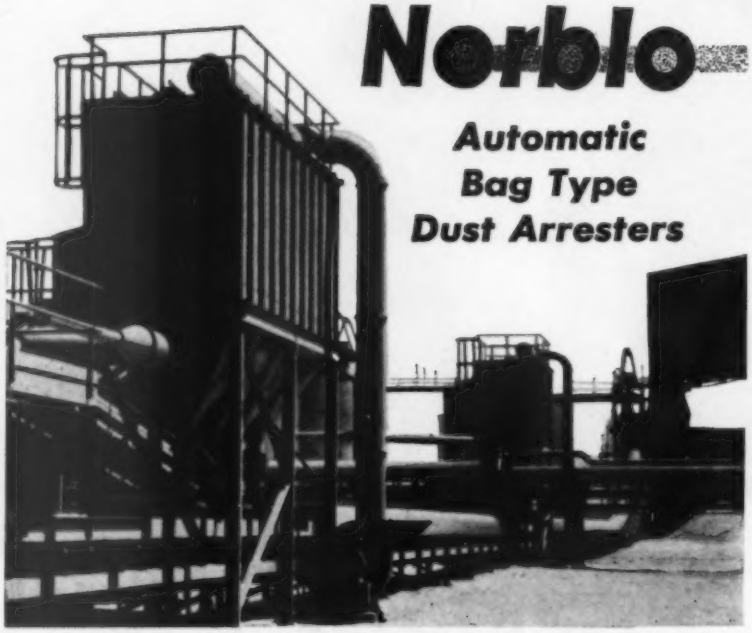
Besides the applications shown, Stoody Hard-Facing Alloys are regularly used all over the nation for rebuilding and protecting Shovel Idlers, Drive Tumblers, Boom Heels, Latch Bars, Latch Plates, Buckets and Bucket Teeth. Wherever there's wear, you'll find effective prevention with STOODY ALLOYS!

STOODY COMPANY
11971 East Slauson Avenue
Whittier, California

Full dust collecting capacity always available from

Norblo

Automatic Bag Type Dust Arresters

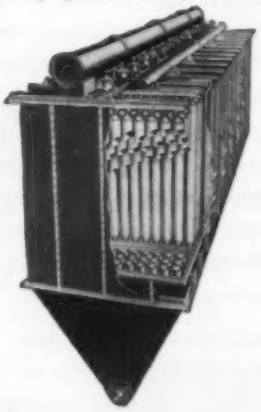


Norblo Dust Arresters at California Cement Corp. plant at Mojave, Cal.

Twenty-four hours a day is a gruelling grind, but Norblo equipment takes it. What's important to plant owners and operating staff is that full dust collecting efficiency holds level during the day and night punishment.

Norblo installations include a group of basic compartment units, each housing 78 cylindrical bags. Variable cyclic cleaning involves one compartment at a time, and that for only a few seconds. Engineered to the needs of each installation, there's ample capacity without waste, but without undue strain on the equipment. Easy maintenance is provided for.

Users of Norblo Equipment in cement plants, industrial plants of many types, and mining and smelting agree that complete satisfaction is assured when you install Norblo. Write for information—state your dust collection problem.



Norblo also builds centrifugal and hydraulic dust collectors, exhaust fans, cement air cooling systems, and portable type dust collectors.

The Northern Blower Company

6407 Barberton Ave., Cleveland 2, Ohio • OLympic 1-1300

Norblo ENGINEERED DUST COLLECTION SYSTEMS FOR ALL INDUSTRIES

his car under such control as to have been able to have stopped the same within the range of his vision, and if you further find that the driver of the car causing the injury was not operating his car at such a rate of speed under the circumstances then existing so that he could stop the car within the range of his vision, and (that) by reason thereof the collision occurred, then I instruct you that the (second) driver is guilty of negligence."

Duty to Pedestrian

All higher courts hold that all motor vehicle operators have a right to presume that there is no dangerous impediment in any part of the highway. This principle of law applies to all interference with safety of travel arising from temporary uses of the highway that are not normal, and it relieves persons passing along the highway from any obligation to look for such interference with travel. On the other hand, a pedestrian is not entitled to recover damages where the evidence clearly indicates that the injury resulted from negligence of the pedestrian.

For example, in *Nerney v. Stanley,* 150 Atl. 370, the evidence showed that a woman who was walking on a sidewalk saw a motor-truck loaded with concrete standing at the curb. She did not observe a chute that was lying across the sidewalk, and she fell over it. She sued to recover damages, contending that a warning should have been given of the dangerous conditions. The court held the injured woman not entitled to damages, stating the following important law.

"We are not unmindful of the line of decisions holding that a person walking along the sidewalk of the public street is not bound as a matter of law to look out for obstructions in the nature of a nuisance; but in the present case that rule is inapplicable, because . . . where the pedestrian has notice of an unusual condition, saw it in fact, and was thereby charged with the duty to exercise reasonable care to avoid injury, (it) cannot be denied that reasonable care required visual scrutiny; and yet the plaintiff said she did not look for any hole at the place in question; it was her duty to do so in the circumstances present."

Silicosis Law

Considerable discussion has arisen from time to time over the legal question: If an employee who has contracted silicosis suffers increased disability or death indirectly from the disease, is the employee entitled to receive compensation under the State

Profitable trends in the use of refractories

Cement plant expansion aided by Laclede's 'one-package' refractory service

To help you meet expanding cement and lime needs, make profitable use of Laclede-Christy's 'one-package' service. This service does more than satisfy your refractory requirements. Certainly you obtain highest quality fire clay refractories—alumina liners (40% to 70%), castables, plastic and all special and standard refractories—for rotary kilns, hoods, clinker coolers, and other uses.

You may also obtain extra Laclede service. Laclede ceramic engineers, modern research facilities and technically trained personnel are on hand to help you solve special problems.

Laclede-Christy's nearby stock locations mean prompt delivery—of one or several types of refractories.

Next time you need refractories, call your Laclede man. Or, contact headquarters to help satisfy your specific needs.

Laclede-Christy Refractories for the Cement and Lime Industry

Laclede 70 (70% Alumina) — particularly suited for hot zone liners in cement, lime, dolomite and magnesite kilns.

Laclede Peerlac (60% Alumina) — for kiln areas requiring lining materials of higher refractory value than high duty and super duty fire clay brick.

Laclede Kiln Liners for all intermediate and cold zone applications.

Laclede Plastic Refractories for hoods and stationary clinker cooler arches.

Laclede Castable Refractories for kiln hoods.

Suspended Arches for stationary clinker coolers.

LACLEDE-CHRISTY COMPANY DIVISION

H. K. PORTER COMPANY, INC.

2000 Hampton Avenue · St. Louis 10, Missouri

SAFETY'S ALWAYS IN SIGHT

Ever worried about your crew forgetting the rated capacity of a block? You're free from worry and they're free from danger with Crosby* "Load-Rated" Blocks because the load capacity is *embossed* in the side plates! A quick glance shows what the limits are—no chance to overload the block by mistake. Crews the world over are protected by genuine Crosby "Load-Rated" Blocks—are yours?

*REGISTERED TRADEMARK

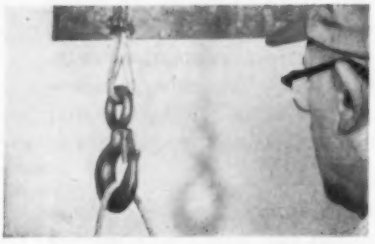
THE RIGHT COMBINATION

An exacting combination of design, steel and drop forging goes into Laughlin Shackles. A combination that results in maximum strength without brittleness that can result in fracture under shock load or in extreme cold! Pins used in Laughlin Shackles are forged from the same high quality steel—their extra hefty design makes them safer when shock loads accidently occur. When you see the famous Laughlin trade mark on shackles (and all other Laughlin fittings), you're seeing the mark of safety! Your nearby distributor has shackles in sizes from 3/16" to 3".

Double Clevis Link attaches ¼" to ½" chain to rings, end and sling links, eye hooks, pad eyes, tractor eye bolts and other fittings.

The world's most complete line of fittings for chain and wire rope is described in the catalog available from your distributor.

LOADS STAY PUT!



Anyway you handle it—rough or easy—your load won't come off a Laughlin Safety Hook until *you* release it! The hook is drop forged and heat treated. The fool-proof latch mechanism is made of long life stainless steel or bronze—it'll never rust, never jam! See your Crosby-Laughlin distributor for information on sizes and capacities.

LAUGHLIN LINKS INSTALLED QUICKLY

Lower downtime—fast changeover is reported by companies using super safe Laughlin Double Clevis Links to couple standard and alloy chains to fittings. Users everywhere have cut out expensive, time-consuming welding and blacksmithing in favor of simple installation. Laughlin's heat treated

Stocked and sold by leading distributors everywhere

CROSBY-LAUGHLIN *Division*

American Hoist and Derrick Company

FORT WAYNE 1, INDIANA

Workmen's Compensation Act? According to a late higher court decision, the answer is no.

According to this court, where a new disease causes the death of an employee who was previously suffering from silicosis, and the new disease was not brought about by silicosis but the only effect silicosis had was to lower his vitality and weaken his resistance, the death or injury is not within the scope of the State Workmen's Compensation Act.

For example, in *Stauffer v. Hubley Manufacturing Company,* 30 Atl. (2d) 370, it was shown that a state law provides that compensation shall not be payable to employees for partial disability due to silicosis, anthracosilicosis, or asbestosis. The law also provides that compensation shall be payable for total disability or death solely by silicosis, anthracosilicosis, or asbestosis, or by silicosis, anthracosilicosis, or asbestosis accompanied by active pulmonary tuberculosis.

An employee named Howard had worked for a company for about 25 years. His occupation exposed him to the hazard of silicosis. About three years before his death he consulted a physician, who diagnosed his trouble as acute bronchitis. However, about two years before his death his physician became convinced that Howard had silicosis and advised him to change his occupation. He was not disabled or laid off because of silicosis, but soon afterward he was unable to work because of what was diagnosed as streptothricosis, a rare, branching fungus type of infection, which resulted in an abdominal abscess. He was treated at his home for three weeks and then was taken to the General Hospital, and stayed in the hospital until his death.

Howard's wife applied for compensation under the State Workmen's Compensation Act and the lower court granted her application. However, the higher court reversed the verdict and in holding the wife not entitled to compensation, said:

"The medical testimony is clear and undisputed that the patient died of the streptothricial infection: that this infection was not caused by or brought about by the silicosis from which he was suffering in a serious state, except that the silicosis lowered his resistance, so that when he did develop the subsequent infection he had no resistance for it. . . ."

Independent Contractor Law

A reader asked this question: "Please give me the law as to when an employee of an independent contractor is injured while doing work

ENGINEERS SERVING THE ROCK PRODUCTS INDUSTRY FOR OVER 30 YEARS

Peerless Cement Corporation
Port Huron, Michigan Plant

Is AUTOMATION the Answer . . . for You ?

What yardstick can a management man use to evaluate Automation for his company?

Will it increase productivity, decrease costs, improve product quality—and to what degree? What capital investment is required, and how can it be amortized?

These are the questions which must be answered. They are the kind of problems which clients regularly bring to G & V for analysis and solution.

Giffels & Vallet's broad experience in the planning and engineering of production facilities . . . for many companies in many industries . . . at home and abroad . . . has brought about a practical insight and understanding of the complex problems involved . . . and their solution.

This is experience available to you—in the development of new plant facilities and modernization programs.

G & V services are discussed in a special Planning Brochure. A copy will be mailed on request.

INDUSTRIAL ENGINEERING DIVISION

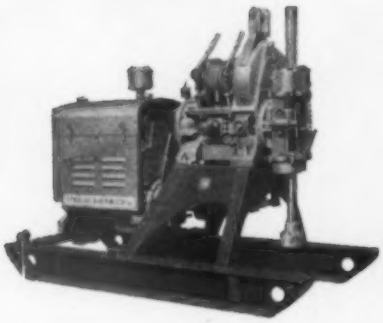
Giffels & Vallet inc.

DETROIT 26, MICHIGAN New York, Chicago, Houston

Canadian Affiliate: Giffels & Vallet Ltd., Toronto and Windsor

Plant Layout • Process Development • Automation Engineering • Materials Handling • Equipment Design • Building Design

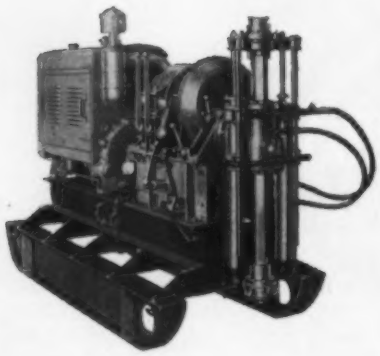
WE HAVE A CORE DRILL MACHINE



THAT WILL MEET YOUR NEEDS

UP TO 3000 FEET DEEP*

*Depending Upon Size Core Required.



Yes . . . if you need a small one or a heavy one we have just the core drill machine for you. Manufactured by us and used in our own contract drilling department they are made to operate efficiently under the most difficult conditions, giving you the utmost in performance. Write today, giving full details and a descriptive folder on the proper size will be sent. (Skid mounted, trailer mounted, truck mounted.)

SPRAGUE & HENWOOD, Inc.
SCRANTON 2, PA.

S&H SINCE 1863

BRANCH OFFICES: NEW YORK • PHILADELPHIA • PITTSBURGH • ATLANTA
GRAND JUNCTION, COLORADO • BUCHANS, NEWFOUNDLAND

for his employer. Is the property owner himself always liable in damages to the injured independent contractor's employee?"

Of course, the law is well settled that all property owners are legally obligated to exercise "reasonable" care to avoid injury to employees and all other persons. Another well settled principle of law is that all persons who come upon private property must use reasonable care to protect themselves against obvious dangers.

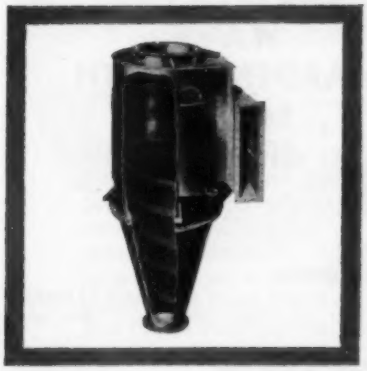
For illustration, in *Le Vonas v. Acme Company,* 40 Atl. (2d) 43, it was shown that a quarry company made a contract with an independent contractor to do certain repairs. This independent contractor supplied his own employees, and equipment to do the work. One day while moving materials by means of a crane, with a boom 70 ft. long, the boom contacted a high voltage power line and seriously shocked two employees of the contractor. These employees sued both the electric company, which owned the power line, and also the quarry company for heavy damages. In holding the employees not entitled to recover any damages, the higher court said:

"The law does not require that a person who maintains even so deadly an instrumentality as a high voltage electric wire, shall anticipate at his peril every possible fortuitous circumstance under which some person might make a contact with the wire, resulting in injury or death. . . . When a person undertakes work which exposes him to obvious dangers which he knew or had the opportunity to know, he must be considered as having assumed such risks, and he cannot recover for any injuries resulting therefrom."

Another interesting point of law involved in this case relates to liability for injuries to employees of independent contractors. In this respect the higher court explained that if a property owner employs an independent contractor to do certain work, he owes to the employees of the contractor only "reasonable care" to furnish them a safe place to work. In other words, liability for injuries to an employee of an independent contractor rests upon a property owner only when the testimony shows that the injuries arose out of an abnormally dangerous condition which was concealed and of which such injured employee has no knowledge or notification. However, if the danger is apparent to the employee, he assumes the natural "risks" of the employment and he cannot recover damages for any sustained injuries.

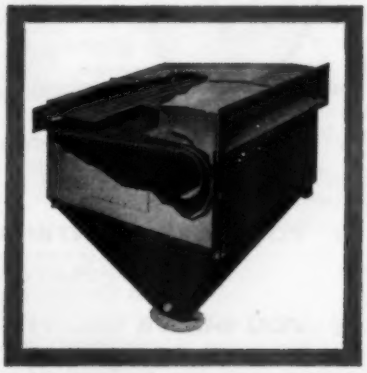
How Buell's Exclusive Rapping Mechanism delivers Extra Dust Collection Efficiency

ORDINARY RAPPING
Shakes dust from collecting electrodes. Re-entrainment of cloud of dust reduces precipitator efficiency
BUELL RAPPING
Shears dust from collecting electrode surface, minimizes scattering and re-entrainment.



Buell Cyclones offer two "extra-efficiency" advantages: (1) exclusive Shave-off which harnesses double-eddy and puts it to work, and (2), large diameter design which eliminates clogging.

Complementing the extra efficiency of rapping in Buell "SF" Electric Precipitators, the unique Spiralectrodes add further efficiency through 50% to 100% higher electron emission, constantly accurate spacing, longer electrode life.



Buell's Low Resistance Fly Ash Collector combines top efficiency with low draft loss, for natural or forced draft installations. Ideal for boilers from 100 to 2000 BHP.

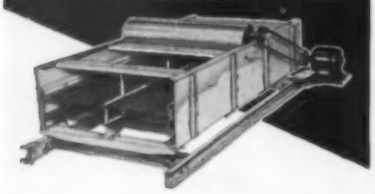
For more specific data about Buell's *extra efficiency*, write Dept. 18-K, Buell Engineering Company, 70 Pine Street, New York 5, N. Y.

buell®

MECHANICAL ELECTRICAL

Experts at delivering Extra Efficiency in **DUST COLLECTION SYSTEMS**

UNIVERSAL
OFFERS THE BEST
IN VIBRATING SCREENS
AT THE LOWEST PRICE



Before you buy, be sure to get a copy of the new UNIVERSAL Catalog #150!

There's a model to fit your particular requirement, priced within the smallest budget.

Write today for free catalog #150!

UNIVERSAL
VIBRATING
SCREEN CO.
Racine, Wisconsin
Quality Screens Since 1919

Manufacturers' News

Macwhyte Company, manufacturers of wire rope at Kenosha, Wis., have announced that Russell J. Whyte has been appointed field sales manager. For the past 12 years he has been a district factory representative in California, and prior to this was employed by Macwhyte Company in product engineering work. In all, he has 21 years of service with the company.

Mr. Whyte will report directly to the vice-president in charge of sales, and will be responsible for all field sales activities and for distributor and customer relations conducted from Kenosha.

The Holyoke Division of Worthington Corporation, Harrison, N. J., has announced the recent appointment of the Free State Equipment Company, Inc., 2807 Sisson Street, Baltimore, Md., as their distributor for portable compressors and contractors' tools in the territory covering portions of Maryland and Delaware.

J. W. Bloomquist, domestic sales manager of Euclid Division of General Motors Corporation, Cleveland, Ohio, has announced the appointment of two new authorized dealers for the full line of Euclid Scrapers, Rear-Dumps, Bottom-Dumps and Crawler Tractors.

Anderson Equipment Company, now represents Euclid in western Pennsylvania and the West Virginia countries of Brooke, Hancock, Ohio and Marshall.

Archer Tractor and Machinery Co., located at 1118 S. Main Street in Salt Lake City, Utah, will represent Euclid in Utah, southwestern Wyoming and Elko and White Pine counties in Nevada.

J. H. Smith has joined the Thew Shovel Company, Lorain, Ohio, as resident patent attorney and new product analyst. Prior to joining Thew, Mr. Smith had practiced patent law in the Chicago area and had served as a consultant in research.

UP! OUTPUT . . . Dredging the Modern Way with New Suction Dredge Agitator*
AGIPELLER*
*(TRADEMARK) *Pat. Pending

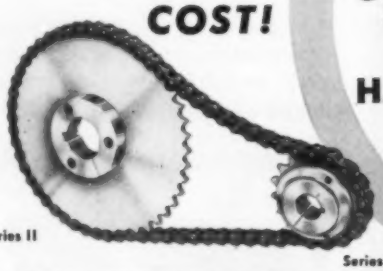
Oscillating cutter assembly shunts aside oversize . . . keeps nozzle clear, in most deposits.
Strong teeth cut and loosen compacted deposits.
Oversize stones wedging in nozzle are crushed and eliminated.

A durable, double-duty digger and screener that loosens compacted deposits and prevents clogging. Low first cost, minimum upkeep. Ideal for portable dredges.

Manufactured only by
PFARRER-SCHMIDT ENGINEERING CO., INC.
Dredge and Pump Engineers
211 W. Wacker Drive
Chicago 6, Ill.
RAndolph 6-7174, 6-7175
COSTS DOWN!

AT NO EXTRA COST!

Only Grip-Master® SPROCKETS HAVE HARDENED TEETH to 7" in diameter ★



Series II
Series I

★ YOU CUT OPERATING COSTS!
Because hardened teeth means better resistance to shock loads and abrasion, you get longer chain drive life "on-the-shaft."

★ YOU SAVE MAINTENANCE COSTS!
Sprocket replacement costs are reduced about 30%. Hubs or bushings can be used over and over, with installation and removal fast, clean and simple.

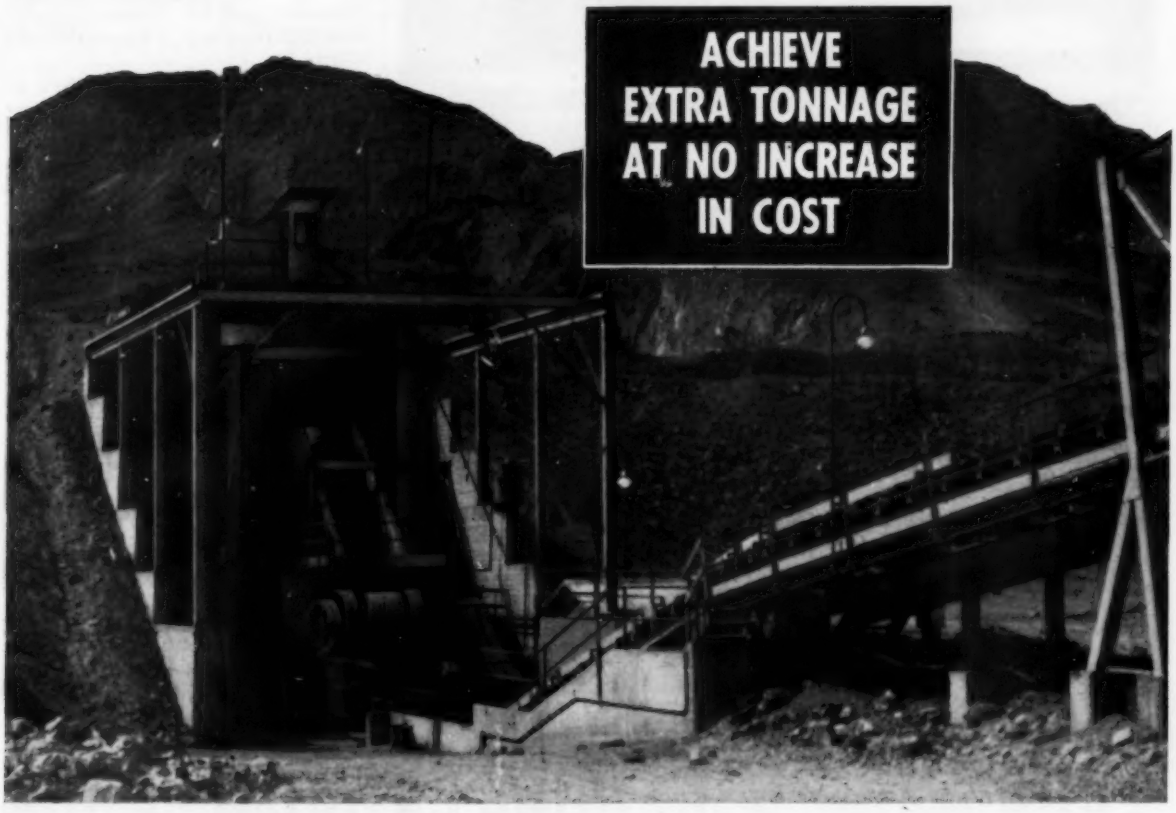
★ YOU SOLVE DELIVERY PROBLEMS!
Grip-Master Sprockets are available "off the shelf" for quick delivery. Cuts space and storage costs for you.

For complete details, write today for your Grip-Master Sprocket brochure.

cullman
POWER TRANSMISSION
ROLLER CHAINS AND SPROCKETS
33486
CULLMAN WHEEL CO. • 1342 Altgold Street • Chicago 14, Illinois

Get a Better Break on Stone Reduction with

TRAYLOR JAW CRUSHERS



TRAYLOR Jaw Crushers are Traylor-Made to give you the break you need for cutting production costs on primary rock crushing. Traylor Curved Jaw Plates reduce choking and packing to achieve greater hourly tonnages of more uniform product . . . *at no increase in power requirements.* Less churning and slippage of the material being crushed also reduces unnecessary wear; as a result Traylor Curved Jaw Plates often outlast ordinary straight plates by as much as 3 to 1.

The massive construction of Traylor Jaw Crushers stands up to the heaviest round-the-clock production schedules with less down-time and lower maintenance costs. Available in 5 types and 33 sizes with feed openings from 8″ x 12″ to 60″ x 84″, Traylor Jaw Crushers provide you with the capacity for crushing from 4 to 1,000 tons of rock per hour.

Write today for your copy of bulletin 11-120 which describes and illustrates many cost cutting features of Traylor Jaw Crushers.

Traylor

TRAYLOR ENGINEERING & MFG. CO.
810 MILL ST., ALLENTOWN, PA.
SALES OFFICES: New York · Chicago · San Francisco
CANADIAN MFRS: Canadian Vickers, Ltd., Montreal, P.Q.

MORRIS *meets the CHALLENGE of INDUSTRY'S NEW FRONTIERS*

No Matter What Your Present or Future Heavy Pumping Problems Are . . . Morris Can Satisfy You NOW!

The new Morris Type RX Slurry Pump is specifically engineered to handle the viscosities, densities and special characteristics of the slurries and sludges developing from industry's ever-advancing products. It is engineering attuned to the future . . . designed to meet the demands of a towering tomorrow.

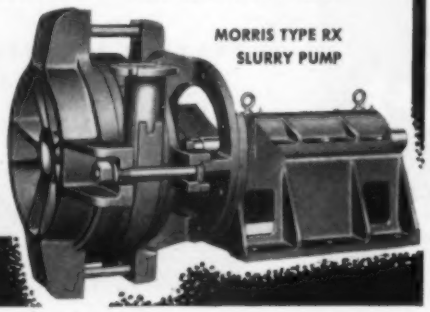
Rugged, Dependable, Trouble-Free; Operates With Minimum Attention . . . Cuts Maintenance Costs!

The new Morris RX is designed for performance perfection under all conditions, including heavy, coarse, fine slurries, dispersions and sludges. Operates at low speeds; quickly dismantled for inspection, avoiding lengthy lay-up time.

MORRIS MACHINE WORKS

Baldwinsville, N. Y. *Sales Offices in Principal Cities*

FREE SERVICE: Morris engineers will gladly recommend the custom-made pump best suited to your needs. Send necessary data today.



MORRIS TYPE RX SLURRY PUMP

MORRIS CENTRIFUGAL PUMPS

The election of Roy T. Hurley and Richard K. Paynter, Jr., as directors was announced by J. R. MacDonald, chairman of the board and president of General Cable Corp., New York, N. Y.

Mr. Paynter is executive vice-president of New York Life Insurance Company, and Mr. Hurley is chairman and president of Curtiss-Wright Corp.

Prior to his election in 1949 as president of Curtiss-Wright Corporation, Roy T. Hurley was director of manufacturing engineering, Ford Motor Company, Dearborn, Mich. From 1935 to 1947 he was vice-president in charge of manufacturing

R. T. Hurley

R. K. Paynter, Jr.

at Bendix Aviation Corporation, Detroit, Mich.

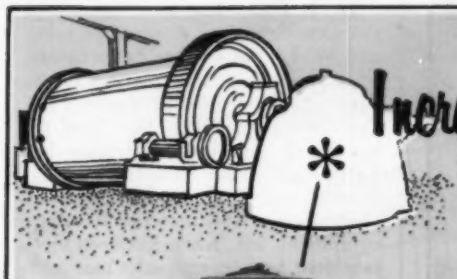
Richard K. Paynter, Jr., was appointed executive vice-president of New York Life Insurance Company in 1954, after a 20-year association with that company. He is a director of the New York Trust Company, Otis Elevator Company and other well known companies.

R. J. Stoddard, executive vice-president of American Hoist & Derrick Company, St. Paul, Minn., announces four new appointments in the manufacturing division of the firm.

Hillard M. Patton, formerly foundry superintendent, is now manager of the new foundry division in charge of all castings purchased or made by the firm for use in the St. Paul plant as well as in all other divisions. He joined the firm 15 years ago.

Harry A. Anderson, machine shop superintendent for the past three years, is now manager of general manufacturing in the St. Paul plant. Prior to joining American Hoist, he was plant superintendent of the Toledo division of A. O. Smith Co.

Walter R. Olson, formerly manufacturing coordinator, has been appointed production control manager of the St. Paul and Ft. Wayne plants. He was formerly plant manager and assistant to the vice-president in charge of manufacturing at the Schaible Company of Cincinnati.



Increased CEMENT PRODUCTION

BRADLEY HERCULES MILLS

* *as a preliminary pulverizer for compartment or tube mills.*

The quickest, most economical way to increase your grinding capacity

For the cement manufacturer with excess kiln capacity . . . here is the answer to INCREASED CAPACITIES at an appreciable SAVING IN HORSEPOWER. The Bradley Hercules Mill, used as a preliminary pulverizer, before compartment mills or tube mills, results in INCREASED PRODUCTION of finished material at a LOWER COST per barrel.

Rugged, dustless construction, maximum accessibility keep maintenance costs at an absolute minimum.

Automatic electrical feed control eliminates manual operation.

For complete information, write for Catalog No. 57

Bradley PULVERIZER CO.

LONDON **ALLENTOWN, PENNA.** BOSTON

Since when is MONEY a nuisance?

The squeeze on profits in stone plant operations makes it imperative that no possibility for added revenue be overlooked or disregarded.

That's why we ask you—*"Since when is money a nuisance?"* Specifically, we're talking about the dust you're presently discharging to atmosphere or discarding as sludge.

You may consider it just a nuisance but in 9 cases out of 10—this dust is valuable product — *money* — that you're spreading around the adjacent countryside.

By installing the right Dustex Collector, you can bag more profit—turn a nuisance into cash by recovering this product. Best of all, Dustex presents proof before purchase! Yes, actual proof of the efficiency of a Dustex collector operating as part of your system can be predetermined *before you buy.*

If you want this kind of *proof* on how you can clean-up financially by cleaning up your stack discharge, contact Dustex today. We will make immediate arrangements to have a proof before purchase test made at your plant without cost or obligation. This Dustex approach makes sense—saves dollars. Phone, wire or write, today.

Dustex CORP.

P.O. Box 2520 • Buffalo 25, N.Y.

cut costs on big quarry jobs!

DAVEY

ROTARY DRILLS

Davey Rotary Drill operated by G. Edgar Harr Sons, well drillers, Lutherville, Md.

For faster, more economical drilling . . . increased production at lower cost, leading quarry and open-pit operators rely on Davey. Suitable for mounting on any make of truck, Davey Rotary Drills move fast between blast holes . . . are easy to set in drilling position.

Daveys are available in 6 different models—air blast, mud pump, or combination types. Rated capacities to 2,000 ft. Outstanding features include choice of power take-off or separate power unit operation, automatic hydraulic feed, hydraulic pull down, heavy-duty rotary table, rugged tubular box-type mast.

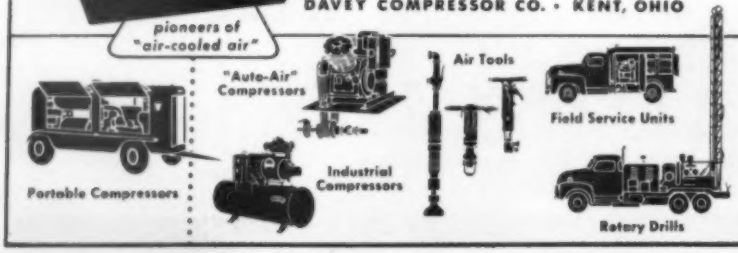
AA-1665

Write for full details!

DAVEY

pioneers of "air-cooled air"

DAVEY COMPRESSOR CO. • KENT, OHIO



W. J. Klein has been appointed vice-president and director of sales, and W. L. Voegeli has been named general sales manager, Tractor Group, by the Allis-Chalmers Mfg. Co., Milwaukee, Wis. The three divisions of the Tractor Group are Farm Equipment, Construction Machinery and Buda, which manufactures engines and material handling equipment. Mr. Klein has been vice-president and general sales manager, Tractor Group, while Mr. Voegeli has been assistant director of engineering.

Mr. Klein became affiliated with Allis-Chalmers in 1928, starting as a salesman at the Sioux Falls branch, and was soon advanced to blockman in the northwestern part of South Dakota. He was transferred to the home office as general sales manager, Tractor Division, in 1953 and soon thereafter was made vice-president.

W. J. Klein

W. L. Voegeli

Mr. Voegeli started with Allis-Chalmers at the Wichita branch as a serviceman in 1935. He was transferred to Omaha, Neb., branch the same year. He spent several months at Casper, Wyo., handling service requirements on Allis-Chalmers industrial tractors working on Alcova Dam. In 1946 he was made supervisor of the technical publications department, and in 1948, he was appointed agricultural tractor sales manager. He held this position until he became assistant director of engineers in 1952.

H. K. Porter Company, Inc., New York, N. Y., is acquiring the business of West Virginia Steel and Manufacturing Company, Huntington, West Virginia. Announcement was made by B. Campbell Blake, vice-president and general manager of Porter's Connors Steel Division, Birmingham, Ala., with which division the operations of the new plant will be combined.

West Virginia Steel, with offices and plant in Huntington, was founded in 1907. J. J. Durkin, West Virginia's executive vice-president, who jointed them in 1928, will continue to supervise operations at Huntington.

Comes in 2½", 3" and 3½" dia.—insensitive to caps, friction, shock—non-headache-producing

WHAT IT IS —"Nitramex" No. 3's a *new* blasting agent with the power of 60% ammonia gelatin—PLUS safety advantages *you don't find in conventional explosives.* It's insensitive to caps, bullets, friction and impact of heavy weights. A powerful primer is needed to detonate it—and for maximum safety, only the special non-nitroglycerin "Nitramex" No. 3 Primer is used. Consider what this means in terms of safer loading—and handling misfired holes.

WHERE TO USE IT —"Nitramex" No. 3—designed only for large wagon-drill holes—performs best in hard-shooting formations—both wet and dry work. In wet work, you can load one day and fire the next under depths of water up to 25'.

WHY —Combined with Pelletol No. 1 it has a higher loading density than any conventional explosive—AND WITHOUT TAMPING. This means more rock per foot of hole. It's easy to handle and load. Sinks rapidly in water, WITHOUT POLING—and DOES NOT CAUSE HEADACHES. Thanks to a special coupling bail, loading moves fast.

OTHER "EXTRAS" —Use either the 2½", 3" or 3½" dia.—"Nitramex" No. 3 fits the need. And it comes in sturdy 24" fiberboard tubes with sealed metal ends that stand rough handling and abrasion.

So for maximum safety and power in tough-shooting rock—order "Nitramex" No. 3 and its Primer. Another Du Pont "team" that will pay off for you! Call our man or write: E. I. du Pont de Nemours & Co. (Inc.), Explosives Dept., Wilmington 98, Delaware.

IDEAL FOR ELECTRIC INITIATION
You can thread electric caps or Primacord through tunnel of "Nitramex" No. 3 Primer. This dependable 2" x 6" primer alone will detonate the shot,

... OR PRIMACORD INITIATION
and each end contains a handy coupling and lowering device which assures fast, efficient loading into holes. (Device shown in photo above.)

DU PONT
BLASTING AGENTS

Products of Du Pont Research

DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING...*THROUGH CHEMISTRY*

"Quality Unlimited," a new sound-color film describing the manufacture of wire rope, has been made available by the Wickwire Spencer Steel Division of the Colorado Fuel & Iron Corporation, New York, N. Y.

Running 30 minutes in length, the film follows all the operations in the production of wire rope from basic steel making to the testing of the finished rope. Special emphasis is given to the chemical and physical tests that accompany every step in the manufacturing process and insure the uniform high quality of Wickwire rope. Applications and proper care of wire rope are also illustrated in the film.

For information on obtaining copies of the film, write to the Colorado Fuel & Iron Corporation, 575 Madison Avenue, New York, N. Y.

William H. Schmidt, Jr., executive editor of *Railway Age* has been named director of public relations for the Baltimore and Ohio Railroad. He is recognized as an outstanding authority on the American railroad industry. He will succeed Joseph L. Stanton, who recently was appointed executive director of the Maryland Port Authority.

better, by far,
for shipping and storing
ROCK PRODUCTS
M/W
MULTIWALLS
by
CHASE BAG
there's nothing better!
Place your next order with
CHASE BAG COMPANY
General Sales Offices: 309 W. Jackson Blvd., Chicago 6, Ill.
Personal Service and Prompt Shipments from 32 Nation-wide Branch Plants and Sales Offices

In a recent organizational change of the Oshkosh Motor Truck, Inc., Oshkosh, Wis., B. A. Mosling has been named chairman of the board of directors and John P. Mosling has been elected to succeed his father as president.

John P. Mosling rose to the presidency of Oshkosh Motor Truck, Inc., from his start as a youth working during school vacation periods. One of his first jobs with the company was that of a driver, delivering trucks to dealers throughout the country. From 1937 to 1940, he was one of the company's sales representatives. He was assistant sales manager, 1940 to 1942; sales manager, 1942 to 1950; vice-president, 1950 to 1953; executive vice-president from 1953 to his present election as president.

J. P. Mosling

J. H. Serkowich

Joe H. Serkowich, vice-president, Aubrey, Finlay, Marley & Hodgson, Inc., Chicago, Ill., advertising agency, has been made a director of the company. Mr. Serkowich, long active in earthmoving circles, is account supervisor on the Construction Equipment Division of International Harvester Company. He was formerly associated with Caterpillar, Westinghouse Air Brake and Le Tourneau-Westinghouse.

In 1953 he was chosen Outstanding Young Advertising Man of the Year by the New York Association of Advertising Men. In the same year, he placed second in the Putman Award and in 1954 he was awarded first place, and was named Industrial Ad Man of the Year by the publication *Industrial Marketing*.

Dedication ceremonies at the enlarged Joseph T. Ryerson & Son, Inc., steel service plant, Jersey City, N. J., were attended by some 3,000 of the firm's customers, and other business and civic leaders. Ryerson threw open the doors of its big plant in celebration of the completion of an addition which increases capacity 50 percent. Hosts for the occasion were Ryerson officials headed by Joseph L. Block, chairman; Charles L. Hardy, president, and William O. Springer, manager of the New York plant.

Fights Deposits!

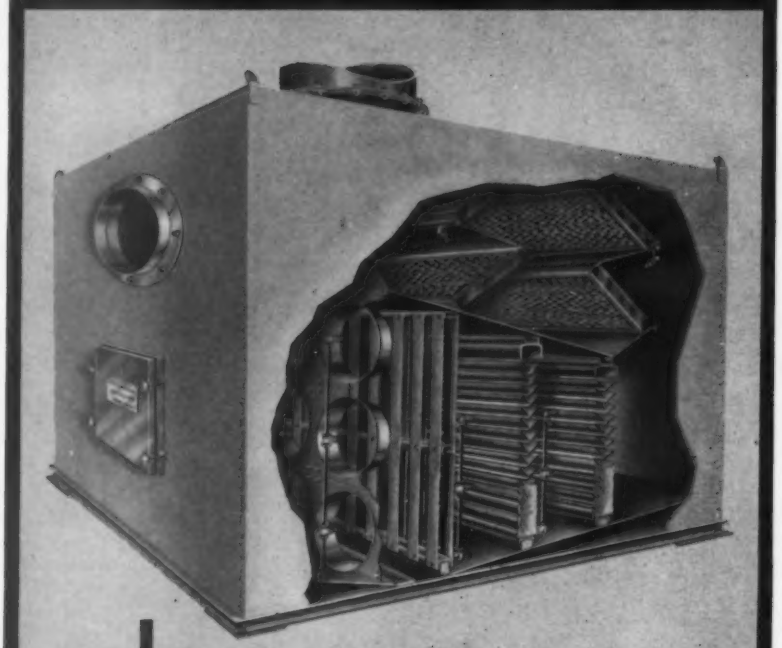
Keep out power-robbing deposits in your heavy duty Diesels. Refill with Sinclair SUPER TENOL® for the tough jobs! It helps to eliminate deposits of carbon, varnish and sludge that impair engine efficiency. SUPER TENOL is specially engineered to fight the effects of high temperature, engine over-load and continuous stop-and-go operation. Your engines last longer!

Refill now with Sinclair SUPER TENOL. Contact your local Sinclair Representative or write Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y. *There's no obligation.*

SINCLAIR

SUPER TENOL MOTOR OIL

Better dust control...



at

- ROTARY KILNS
- DRYERS
- ROASTERS
- MIXERS

NOW better dust control can be yours with the new Johnson-March Type H Liquid Precipitator Scrubber. This unit is the result of years of research and experience in effectively controlling dust in Asphalt and Rock Products plants. Very high efficiency dust collection is obtained through multiple action scrubbing of dust laden air. Available in sizes up to 40,000 c.f.m., the new Type H unit is engineered and built by the makers of the famous J-M low-cost liquid systems for controlling dust before it becomes airborne at crushers, screens, hoppers and conveyors.

• For an obligation free analysis of your dust problems, write . . .

Johnson March

Dust Control Engineers

1724 Chestnut Street, Philadelphia 3, Pa.

CANADIAN REPRESENTATIVES: G. F. Sterne and Sons, Ltd., Brantford, Ontario

Robert C. Becherer, president of the Link-Belt Company, Chicago, Ill., is one of America's leading industrialists. He has been associated with Link-Belt since 1923 and has devoted his entire business career to the company. In his 33 years with the Link-Belt organization, he has had wide experience in design, engineering and manufacturing and has acquired an intimate knowledge of the application and use of materials handling, processing and power transmission equipment by American industry in a period when more efficient manufacturing methods are playing an increasingly more important role in mass production.

R. C. Becherer

E. K. Kelly

The appointment of Eugene K. Kelly as works manager of the Detroit Diesel Engine Division of General Motors, Detroit, Mich., has been announced by Clyde W. Truxell, general manager. In his new post, Mr. Kelly succeeds Mr. Truxell, whose appointment as general manager was recently announced.

Prior to his present appointment, Mr. Kelly served as master mechanic of aircraft engine operations at GM's Allison Division in Indianapolis, Ind.

Martin A. DeBerardinis has been transfered to the Jacksonville, Fla. sales office of the Pennsylvania Industrial Chemical Corp., of Clairton, Pa., after having spent two years in the firm's Chester, Pa., research laboratory and two years in sales from the Philadelphia office.

Eugene C. Paschal, for the past two years a science teacher in Yellow Springs, Ohio, has joined the staff of the Philadelphia sales office of the Pennsylvania Industrial Chemical Corp.

Link-Belt Company, Chicago, Ill., has moved its Cleveland office to larger quarters in a new building at 3592 Lee Road, Cleveland, Ohio.

J. D. Riley, Cleveland district manager, announced that the move to this central location is being made in order to serve the industrial areas of Cleveland and northern Ohio more effectively.

International Drott

"beat-a-fleet" advantages go underground with NEW TD-9 mining Skid-Shovel

6 attachments for unmatched versatility!

Exclusive Drott Four-In-One is a dozer, bucket, clamshell, and bullclam, all in one.

95-inch Drott bulldozer blade mounts directly onto Skid-Shovel lift arms. Easy to control!

Drott Bullangledozer blade ditches, slopes, dresses...can be angled to either side.

Rock fork constructed of super-strong alloy steel . . . withstands abrasion of loading hard, heavy minerals.

Third, extra valve of Drott Skid-Shovel controls rear-mounted heavy-duty scarifier.

Low profile, 2-prong grapple with top grab arm loads ties or mine props with full control.

You get exclusive wide work range, low equipment investment, and other "beat-a-fleet" advantages for underground mining—in the new International Drott TD-9 mining Skid-Shovel!

This new, big-capacity producer with 71 net engine hp, meets U.S. Bureau of Mines new safety standards for non-coal operations. It features the new stainless steel Drott short-coupled exhaust gas scrubber and cooler, with rear-mounted reserve water tank—and new exhaust gas diffuser. With this system, you get positive, *full 8-hour-shift* removal of harmful irritants, protection from noxious gases, and fire safety.

In addition, low, "trolley-clearing" profile (only 6′ tall) and standard length of the new machine provide unmatched full-load maneuverability, even in cramped quarters. You get all the famous Drott exclusives, too, like triple-power pry-action break-out, and shock-swallowing Hydro-Spring!

Prove the great versatility, handling ease and positive safety of this new underground mining TD-9 Drott Skid-Shovel—with your choice of buckets and attachments shown! See your International Drott Distributor for a demonstration.

International Harvester Company, 180 North Michigan Avenue, Chicago 1, Illinois
Drott Manufacturing Corp., 3126 South 27th Street, Milwaukee, 15, Wisconsin

INTERNATIONAL HARVESTER

INTERNATIONAL®
DROTT®

Drivers last longer...

when heavy-duty trucks use J-M Brake Blocks

Experienced operators know that when their vehicles are equipped with Johns-Manville Brake Blocks they can handle crushing loads without personal danger.

That's because these rugged, durable J-M Brake Blocks are engineered for the job . . . and designed for dependable performance plus maximum service life on trucks, shovels and heavy machinery.

They are "standard parts" on many famous makes of heavy-duty units. For fast, easy replacement, they are now available in Johns-Manville Assembled Sets that put new safety into your equipment.

See your Johns-Manville Distributor for data on J-M Brake Linings and Clutch Facings for industrial equipment, or write Johns-Manville, Box 14, New York 16, N. Y.

Johns-Manville Industrial Friction Sets are available in a wide range of molded or woven, rigid or flexible asbestos materials.

JM PRODUCTS

Johns-Manville

INDUSTRIAL FRICTION MATERIALS

James A. Drain has been named to the newly created post of vice-president and general manager of the Mining and Construction Division, Joy Manufacturing Company, Pittsburgh, Penna. In his new position, he will be responsible for research, engineering, manufacturing, and sales of Mining and Construction Division products.

Mr. Drain first joined the Sullivan Machinery Company—a Joy predecessor company—in 1941 as assistant to the president. He served as vice-president in charge of engineering for Joy until 1948 when he became vice-president and general manager of Joy Manufacturing Company of Canada, Ltd. In 1952 he became president of the Canadian subsidiary.

J. A. Drain

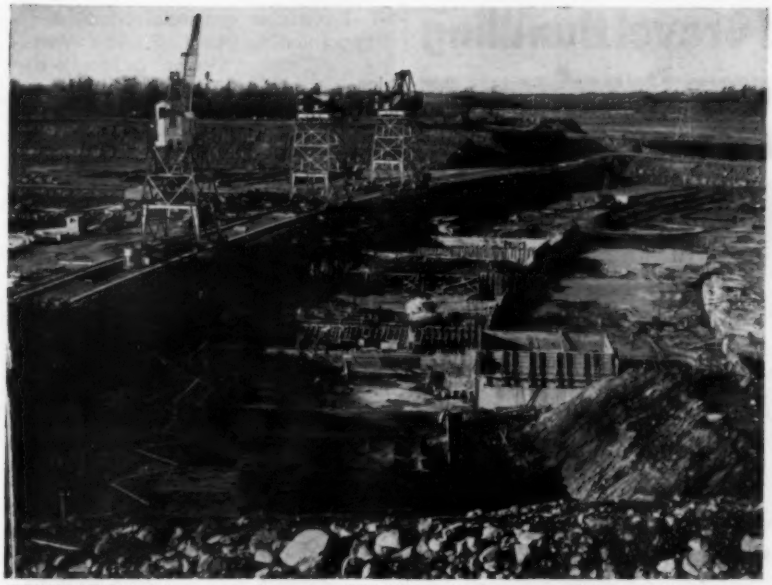
H. Bandstra

Hart Bandstra has been appointed advertising manager for Richardson Scale Co., Clifton, N. J. In this capacity he will be responsible for coordinating the company's entire sales promotion program, including all advertising and publicity.

Mr. Bandstra is a veteran of nearly 40 years with Richardson, starting with the company in 1918. Prior to his present appointment he was service and parts manager from 1923 to 1956, serving as credit manager during the same period, as well as advertising manager from 1924 to 1948.

During his tenure as parts and service manager Mr. Bandstra devoted considerable time and travel to coordinating the acceptance of Richardson Scales by the weights and measures departments of numerous states. Such activity carried him throughout the Middle West and Eastern Seaboard, as well as Canada.

Richard L. Cawood, chairman and president of The Patterson Foundry & Machine Co. of East Liverpool, Ohio, has announced the merger of the Patterson Company with Ferro Corp. of Cleveland, Ohio. The effective date of the merger being October 1, 1956. Mr. Cawood announced at the same time his retirement as chairman and president, also effective October 1. The Patterson Company will operate as a subsidiary of Ferro Corp.



FOUNDATION of Long Sault Dam where 700,000 yards of concrete will be poured by the contractor—Walsh, Perini, Morrison, Kiewit, Utah Companies, Massena, New York.

AGGREGATE TUNNEL CUTS COST OF VOLUME CONCRETE MIXING... ST. LAWRENCE SEAWAY PROJECT

Material handling is a major problem on projects such as the Long Sault Dam on the new St. Lawrence Seaway. Here is a job of such magnitude as to require more than 2400 cubic yards of concrete per day to keep the work rolling.

To handle the necessary aggregates, the contractor constructed, at some distance from the dam site, a tunnel within which a conveyor carries the aggregate to a batch concrete mixer. This tunnel, built right on the job with Commercial Shearing and Stamping steel liner plates, is large enough to accommodate the conveyor belt and walkway for feeder operators.

Placed at intervals in the tunnel roof are openings through which the aggregate flows by gravity from the stockpile directly overhead and which completely covers the tunnel. Feeders installed at intervals in the tunnel roof control the gravity flow of the aggregate from above.

Feeder operators working inside the tunnel control the material flow and selection of sizes to obtain the proper aggregate mixture reaching the conveyor. The belt carries the aggregate to the batch mixer for the addition of cement, water and mixing into concrete.

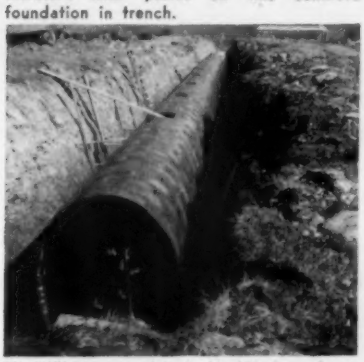
Commercial Shearing and Stamping liner plate was selected for this job because of its ability to withstand the most severe overhead loads, and to provide maximum protection from collapse and cave-in. In addition, the ease of constructing and disassembling Commercial liner plate tunnels make it possible to move or salvage the entire tunnel. This method of large scale aggregate handling, as done at the Long Sault Dam project, is being profitably used by contractors on other major projects.

Commercial Shearing and Stamping steel liner plate is available in a wide size and gauge range. For complete details on how Commercial can help solve your surface or sub-surface tunnel problems write to Dept. 0-45, The Commercial Shearing and Stamping Company, Youngstown, Ohio.

COMMERCIAL
shearing and stamping

YOUNGSTOWN, OHIO
CHICAGO, ILLINOIS
SALT LAKE CITY, UTAH

CONSTRUCTION of aggregate tunnel is quick and simple. Workmen install Commercial's liner plates on this concrete foundation in trench.



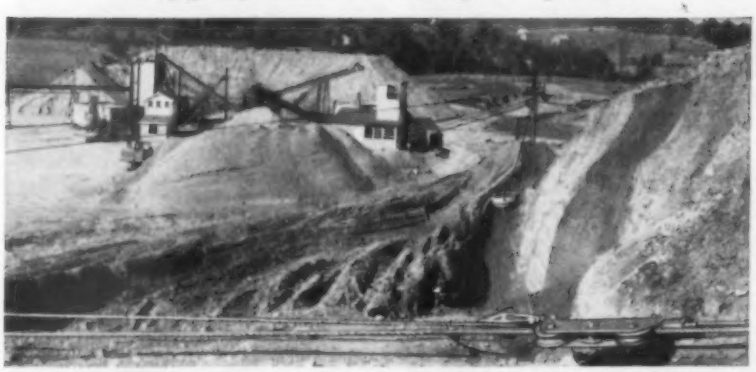
TUNNEL is completed. Unskilled workmen have used only 7 inside bolts to hold each plate. Note aggregate feeder openings.

AGGREGATE, stockpiled on top of tunnel, flows by gravity onto belt conveyor inside tunnel as operators open feeder gates.

CONVEYOR emerges from tunnel (foreground) and feeds aggregate into batch mixer for final processing into concrete. Trucks then haul concrete to dam site without time loss.

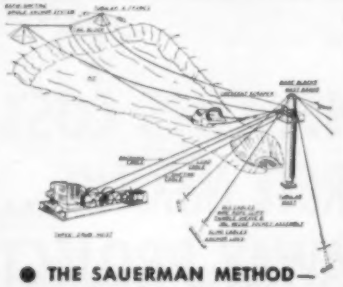
Profitable Sand and Gravel Handling Starts with a Sauerman DragScraper

digging *and hauling to plant*



3-yd. DragScraper digs and hauls sand and gravel from dry pit to plant hopper at 300 fpm.

This 2-yd. DragScraper is dumping river gravel dug from 50 ft. of water into grizzly feeding conveyor to plant. *See Sauerman News No. 147.*



● **THE SAUERMAN METHOD**— *showing a basic DragScraper installation. Variations of this method are Sauerman engineered to handle the toughest digging jobs at the lowest cost per cu. yd.*

A Sauerman DragScraper handles the two basic steps of material flow—digging and hauling—in one continuous operation. No double handling is required. You cut labor costs in half—or even more—because a single machine, controlled by one man, replaces the multiple equipment required by other methods.

Profitable handling is further assured by a maintenance cost of only 1½ cents per cu. yd. for the average size Sauerman installation. On larger machines, the increased volume drops this cost still lower. You'll save money on power, too, by eliminating heavy machinery with limited handling-to-dead weight capacity. You pay only the cost of moving the actual digging tool—a Crescent DragScraper.

The best Sauerman Machine for your plant is governed by the nature of the deposit, location of material, depth and plant layout. DragScraper machines in sizes from ⅓ to 15 yds. provide direct delivery to feeder, scalper or crushers at the lowest cost per cu. yd.

Why not consult Sauerman engineers about your plant? Their recommendations will be based on almost fifty years of sand and gravel excavating machinery experience. Ask for Catalog A (DragScrapers).

SAUERMAN BROS., INC. 634 SO. 28th AVE. BELLWOOD, ILL. Cable: CABEX—Bellwood, Ill.

Crescent Scrapers • Slackline and Toutline Cableways • Durolite Blocks

Eight new distributors have been appointed by Reading Body Works, Inc., Reading, Penna., to handle the firm's complete line of utility and service bodies. The new distributors are:

Al's Welding Shop, Binghamton, N. Y.; Metro Hoist, Inc., Fairfield, Conn.; Auto Truck Equipment Sales, Chicago, Ill.; Cleveland Commercial Auto Body Co., Inc., Cleveland, Ohio; Fred Gichner Iron Works, Washington, D. C.; R. W. Mickey Body Co., Jacksonville, Fla.; Taylor Body Shop, Huntington, W. Va., and Truck & Equipment Service, Miami, Fla.

Acme-Hamilton Rubber Mfg. Corp., Trenton, N. J., announces the appointment of William McNeil as manager of its New York district sales office. He is well qualified through experience; formerly associated with Harnischfeger Corp. for eight years as sales engineer covering New York and New England territories, and prior to that with Gates Rubber Co. as a sales engineer in their Boston territory.

W. McNeil

W. H. Hood

Appointment of Walter H. Hood as sales and service engineer for the Crusher and Process Machinery Division of Nordberg Manufacturing Company, Milwaukee, Wis., is announced by D. A. Cheyette, division vice-president. He will assist customers in Minnesota, northern Michigan, northern Wisconsin, and North and South Dakota, making his headquarters at Nordberg's Duluth, Minn., office.

Samuel W. White, Jr., and Donald W. Koegle have been elected vice-presidents of the Oliver Corporation, Chicago, Ill. Mr. White will head the industrial sales division and Mr. Koegle will have charge of domestic farm machinery sales.

Edward H. Fisher, vice-president, formerly manager of the industrial sales division, has been appointed head of the newly created special products division, and will have supervision of all United States and Canadian sales of the company's numerous industrial and defense products.

HERE'S PROOF!

GENERAL

STRONGER-THAN-STEEL

NYGEN® TIRES

save more money per hour on any job!

GENERAL L. C. M. 24 PLY 16.00-24/25
vs COMPETITIVE BRANDS*

COST PER TIRE HOUR OF SERVICE

AVERAGE COMPETITIVE	.259
GENERAL LCM NYGEN	.224

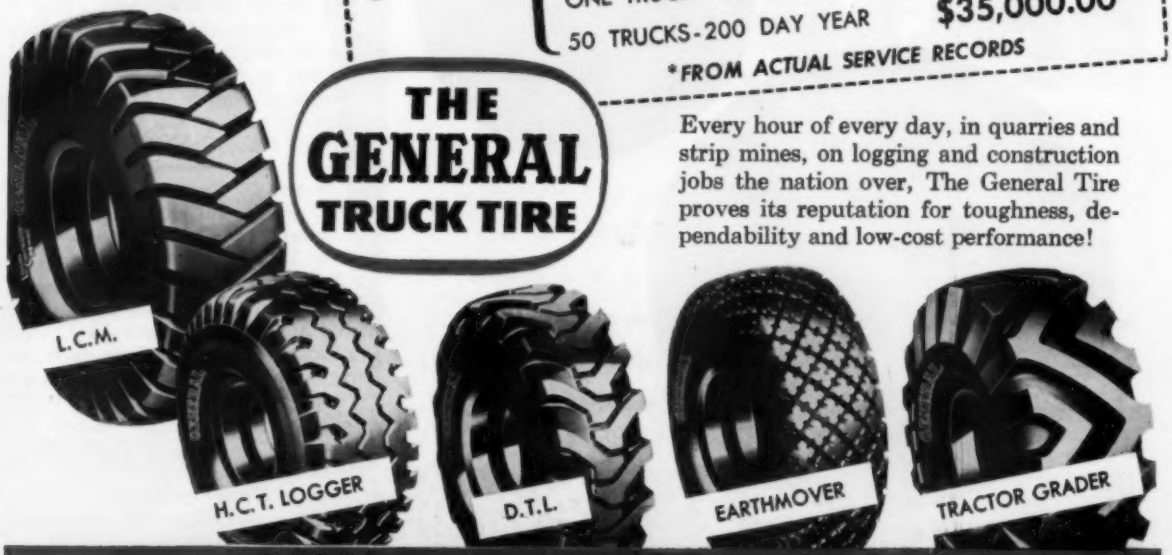
SAVINGS

PER TIRE PER HOUR	$... .03½
PER HOUR 10-TIRE TRUCK	$... 0.35
ONE TRUCK 10-HOUR DAY	$... 3.50
ONE TRUCK 200 DAY YEAR	$... 700.00
50 TRUCKS-200 DAY YEAR	$35,000.00

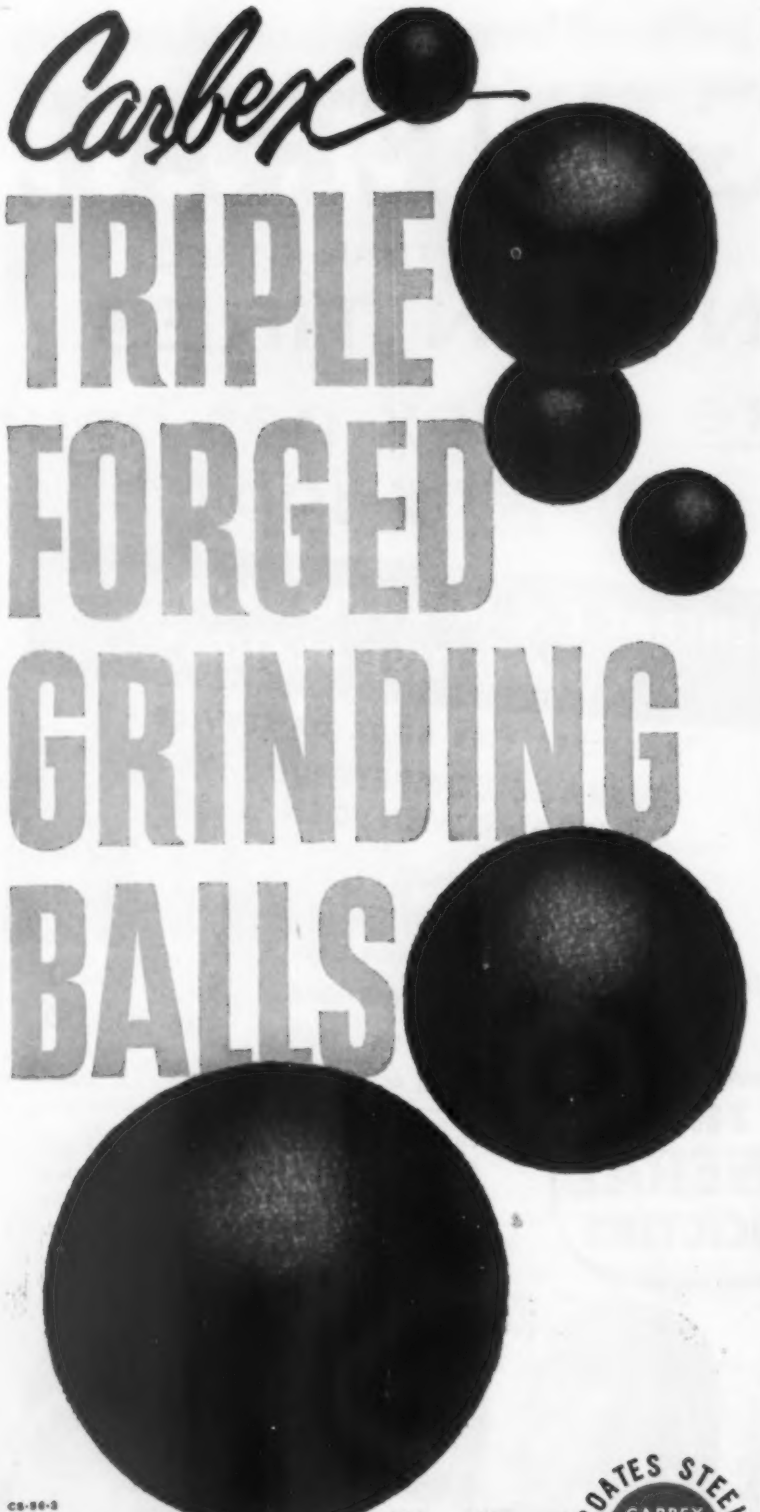
*FROM ACTUAL SERVICE RECORDS

THE GENERAL TRUCK TIRE

Every hour of every day, in quarries and strip mines, on logging and construction jobs the nation over, The General Tire proves its reputation for toughness, dependability and low-cost performance!



THE GENERAL TIRE & RUBBER COMPANY • Akron, Ohio



CB-56-3

COATES STEEL PRODUCTS CO.

GREENVILLE, ILLINOIS

LARGEST EXCLUSIVE MANUFACTURER OF GRINDING MEDIA

Stulz-Sickles Company, of Newark, N. J., producers of *Manganal,* held their annual sales conference recently at The Homestead, Hot Springs, Va.

At the company's annual dinner, an engraved silver tray was presented to B. H. Payne, chairman of the board, in honor of his 35 years' service with Stulz-Sickles Co. Mr. Payne also marked his 50th year in the steel business.

Plans were laid for the 1957 annual sales conference, to be held in Northern New Jersey, and to include an inspection tour of the new Stulz-Sickles Co. plant, which will shortly open in Elizabeth, N. J.

K. A. Roesch, vice-president in charge of the Autocar Division of the White Motor Company, Exton, Pa., announces the appointment of L. B. Philippi as Autocar's off-highway field representative, a newly created position.

Mr. Philippi was formerly eastern regional sales manager for the Dart Truck Company of Kansas City, Mo., in charge of all sales in the eastern half of the United States and all of Canada. Prior to his association since 1948 with Dark Truck, the new Autocar official spent 10 years with the B. F. Goodrich Company in various sales posts from 1938 to 1948 and before that he was president of the Truck Equipment Company of St. Louis, Mo.

Hewitt-Robins, Inc., Stamford, Conn., manufacturer of rubber and machinery products, will establish a new warehouse and sales office in Fort Washington Industrial Park, Fort Washington, Pa. The new building will be the headquarters for the company's Philadelphia district, presently located at Coral and Hagert Streets, Philadelphia.

Wesley H. Peters has been named manager of the expanding Ground Support Equipment Division of the Four Wheel Drive Auto Company, Clintonville, Wis. He will be in charge of the continued development and application of such FWD innovations as the famed *Teracruzer,* the eight-wheel-drive vehicle which can traverse virtually all types of terrain on huge watermelon-shaped tire bags.

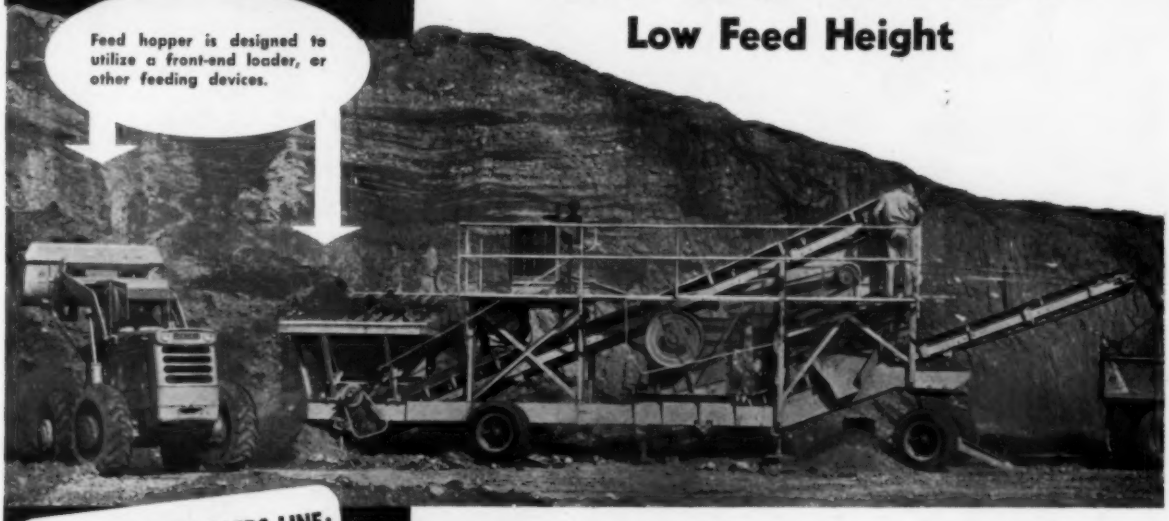
Mr. Peters joins FWD after 15 years in Goodyear Aircraft Corporation's engineering and aerophysics departments. He was project and staff engineer on development and coordination of guided missile and ground support equipment projects the past five years.

ROGERS JOPLIN

Now! A SINGLE PASS

CRUSHING-SCREENING PLANT

Low in Cost — High Production
Quick Setup — Fast Moves
Low Feed Height



THE COMPLETE ROGERS LINE:

- JAW CRUSHERS
- APRON FEEDERS
- RECIPROCATING FEEDERS
- PORTABLE CRUSHING PLANTS
- CONVEYORS
- WASHERS
- DRILL JUMBOS
- MINE HOISTS
- REVOLVING SCREENS
- VIBRATING SCREENS
- LIVE ROLL GRIZZLYS
- UNDERGROUND LOADERS
- ELEVATORS
- ROLL CRUSHERS
- HAMMERMILLS

ROGERS JOPLIN

Designed Specifically for Profits on Small Jobs and Quick Moves

Feeder hopper in this streamlined plant is placed low to facilitate easy loading with any front-end loader. Low side may be placed to back or either side of plant. Product discharge is at 9 feet truck loading height. Easily adjustable feeder varies the production rate. The plant illustrated has a ROGERS 10x36 Jaw Crusher and a ROGERS-SECO 3x8 screen. Removable front dolly. Air brakes optional.

ROGERS IRON WORKS COMPANY
Joplin, Missouri

Are You Looking for FASTER, BETTER, CHEAPER Methods?

When it comes to pipe lines for air, water, ventilating or tailings, Naylor Spiralweld pipe offers you a proved way to get these jobs done faster, more dependably and at lower cost.

The light weight of this distinctive pipe makes for faster, easier handling. Naylor's exclusive structure provides extra strength and safety for dependable performance no matter how rough the going. And, the one-piece Naylor Wedge-Lock coupling gives you the fastest method of connections to simplify installation and cut costs.

If you are looking for ways to speed up pipe line operations in mining service, get the facts on Naylor pipe and Wedge-Lock couplings today.

Ask for Bulletin No. 507.

NAYLOR PIPE

NAYLOR PIPE COMPANY
1257 East 92nd Street
Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 350 Madison Avenue, New York 17, New York

Walter J. Kalmeyer has been advanced to vice-president and Clay C. Hopper has been appointed assistant general manager of Standard Steel Corp., Los Angeles, Calif. Also named were Norman Pitt as chief engineer and Edward J. Meier as public relations director.

Mr. Kalmeyer, who has been production manager, will continue to serve in that capacity, in addition to supervising all phases of manufacturing for the company. He has been associated with Blaw-Knox for 23 years, becoming manager of its Pittsburgh plant in 1951.

Mr. Hopper will assist C. N. Rees, executive vice-president, in management and administration of the company with particular emphasis on sales and development of rotary kilns, dryers, and other specialized process equipment. He was formerly with Vegetable Oil Products Company, Inc., Wilmington, Calif., as vice-president of manufacturing.

George H. Loving, director of sales of Du Pont's explosives department, Wilmington, Del., has been appointed assistant general manager of the photo products department. He succeeds John M. Clark, who recently moved up to general manager of the department.

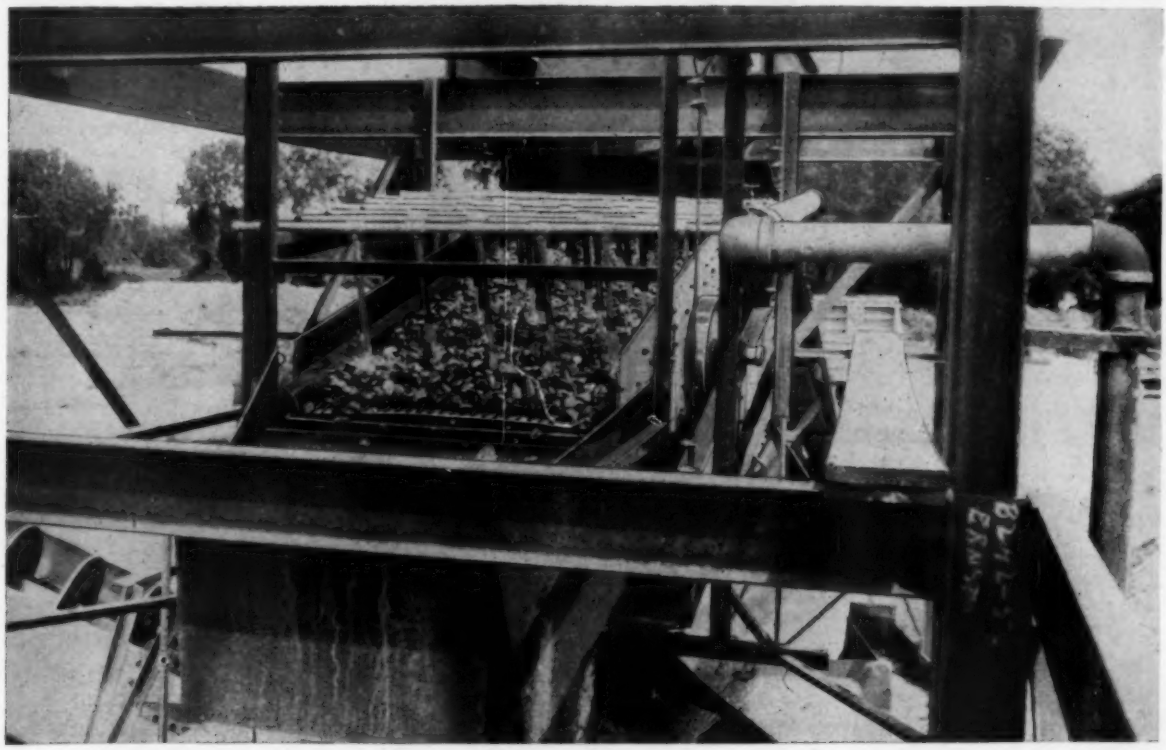
Mr. Loving started with Du Pont in 1930 as a chemist at the Eastern Laboratory, Gibbstown, N. J.

In 1943 he was named special assistant to the manager of the Technical Division to carry out wartime development work on explosive rivets. Later that year he was advanced to assistant director of sales of the Explosives Department and was made director of sales in 1950.

David Coleman, senior partner of Coleman Cable & Wire Company of 4515 West Addison Street, Chicago, Ill., announced removal of their Chicago general offices and warehouse to enlarged facilities at 3919 Wesley Terrace, Schiller Park, Ill. (a suburb of Chicago).

Dorr-Oliver, Stamford, Conn., announces the retirement of Robert C. Campbell, assistant to the vice-president in charge of International Administration and the succession of Henry W. Hitzrot to this position. At the same time, J. W Michener was named to the post of special assistant for engineering sales. Mr. Campbell, director of several Dorr-Oliver Subsidiary Companies abroad and inventor of the Oliver-Campbell cane mud filter, completed 41 years of service with the company on August 1.

OPERATOR MEETS SPECS. FOR N.Y. STATE THRUWAY WITH SECO



Photographed on-the-job, Irving, N. Y.

EVANS BUILDERS SUPPLY SAYS "BEST SCREENS WE EVER HAD"

Pictured above is one of the two SECO screens on-the-job at the high production sand and gravel plant of Evans Builders Supply Company at Irving, New York.

This rugged SECO double deck scalper in company with a 3 x 10 four deck SECO have produced approximately 280,000 tons of aggregates to date to meet the strict specs. of New York State Highway Dept. for use in construction of Thruway sections and sections of Routes 5 and 60. Not only have these SECO screens produced high tonnages, but equally important, they've done it with high accuracy and with no maintenance or down times for repairs. In the words of Mr. Samuel Catalino, owner of Evans Builders Supply, "SECO'S are the best screens we've ever used. They are 100% satisfactory in every way."

SEND FOR SECO CATALOG No. 204 TODAY

SECO

TRUE CIRCULAR ACTION

VIBRATING SCREENS

NORTH, EAST, SOUTH AND WEST OPERATORS ACCLAIM SECO PERFORMANCE

Planning a new plant or modernizing your present facilities for greater production at lower cost per ton? Write, wire or phone SECO. Get the extra performance benefits that make SECO'S preferred coast-to-coast.

SCREEN EQUIPMENT CO., INC.
Buffalo 25, N. Y.

Manufacturers of Vibrating Screens Exclusively

OWEN BUCKETS

Reduced Costs in Countless Hopper Operations

Photo Courtesy of Thew Shovel Co.

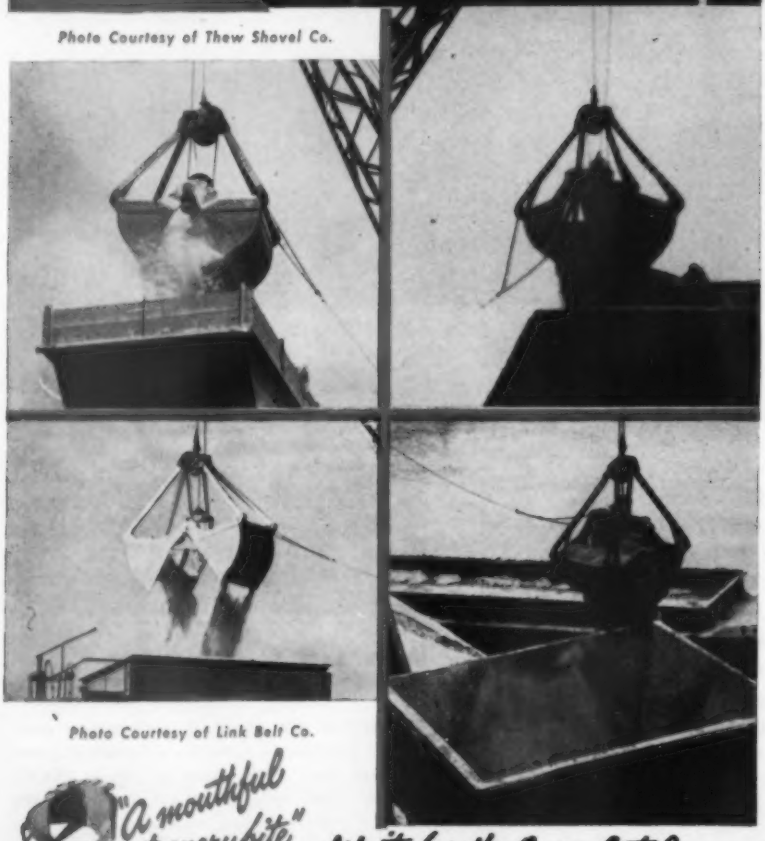


Photo Courtesy of Link Belt Co.

"A mouthful at every bite"

Write for the Owen Catalog...

THE OWEN BUCKET CO.

6050 Breakwater Avenue • Cleveland, Ohio

Branches: New York, Philadelphia, Chicago, Berkeley, Calif., Fort Lauderdale, Fla.

Appointments in the Raymond Bag Corp., Multiwall Bag Division of Albemarle Paper Manufacturing Company, Middletown, Ohio, have been announced.

T. H. Bacon has been named assistant sales manager, with offices at Middletown, Ohio; C. W. Ingham, director of research and development, and E. H. Pyle, packaging engineer, both headquartering in Chicago.

D. F. Wicks is eastern district sales manager in New York City, N. Y.; T. B. Athey, mid-Atlantic district sales manager in Baltimore, Md.; S. G. Shetter, central district sales manager in Middletown, Ohio; and R. W. Drury, Jr., western district sales manager in Kansas City, Mo.

Rowland L. Henry has joined the staff of the Atlas Powder Company's Explosives Division, Wilmington, Del., as a market research analyst. Previously, he was on the staff of the technical services department of the Pennsylvania Salt Manufacturing Company, Philadelphia.

Dr. Robert A. Cooley, formerly with Olin Mathieson Chemical Corp., announces the incorporation of a new company ,the Propellex Chemical Corp., in Edwardsville, Ill.

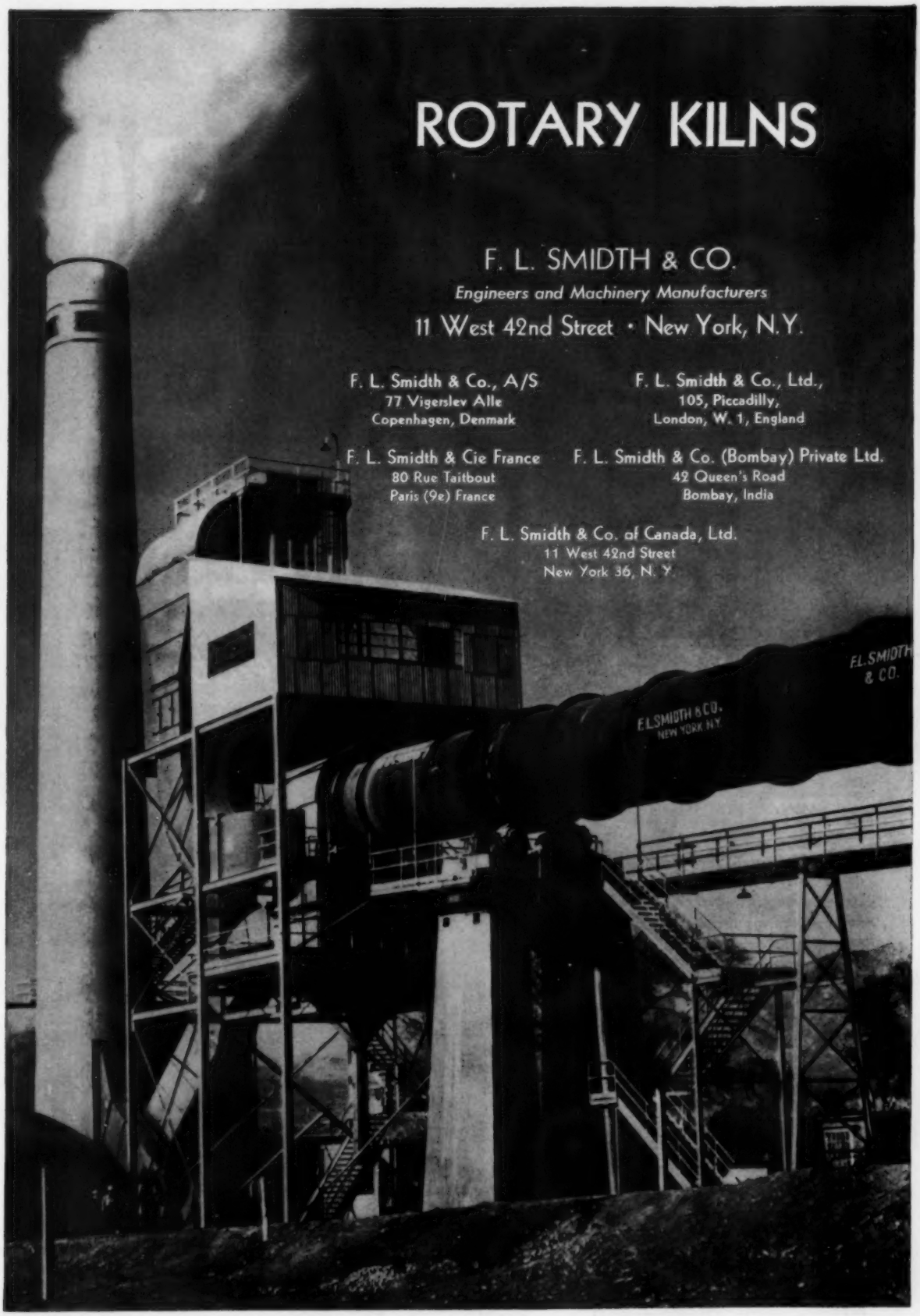
The new company will conduct research and development on and manufacture of propellants and explosives. Major emphasis for the petroleum and mining field will be placed on gas generating devices such as oil well perforators, cement extruders, bridging plugs, and non-electric powered safety devices.

The Propellex Corp. states that sufficient land, buildings, and production facilities are available. For further information, write the Propellex Chemical Corporation, 227 Oakley Place, East Alton, Ill.

Appointment of G. B. Edgell as manager of the engineering department, Davey Compressor Co., Kent, Ohio, has been announced. He has been affiliated with Davey since 1940.

Also announced is appointment of the following six new distributors:

Machinery & Tool Rentals, Columbus, Ohio; Georgia Machinery & Supply Co., Inc., Atlanta, Ga.; Martin Equipment Company, 1845 Plantation Road, Dallas, Tex.; Contractors Equipment & Supply Co., 1239 Lockwood Ave., Racine, Wis.; Paynter Equipment Corporation, 1734 Cass St., Green Bay, Wis.; Johnson Welding & Equipment Co., Inc., 2470 Pennsylvania Ave., Madison, Wis.


ROTARY KILNS
F. L. SMIDTH & CO.
Engineers and Machinery Manufacturers
11 West 42nd Street • New York, N.Y.
F. L. Smidth & Co., A/S
77 Vigerslev Alle
Copenhagen, Denmark
F. L. Smidth & Co., Ltd.,
105, Piccadilly,
London, W. 1, England
F. L. Smidth & Cie France
80 Rue Taitbout
Paris (9e) France
F. L. Smidth & Co. (Bombay) Private Ltd.
42 Queen's Road
Bombay, India
F. L. Smidth & Co. of Canada, Ltd.
11 West 42nd Street
New York 36, N. Y.
F.L.SMIDTH & CO.
F.L.SMIDTH & CO.
NEW YORK N.Y.

On the road - off the road...

THE IMPROVED TDA®

"3 FOR 1" LETTER SERIES

DRIVING AXLES

will do the job better than ever before!

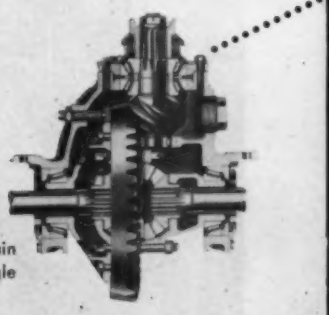
Years of manufacturing experience—plus continuing field and laboratory research—have resulted in many engineering refinements and advanced features on the improved Timken® "3-FOR-1" Letter Series Driving Axles.

With Timken "3-FOR-1" driving axles, housings, axle shafts, differentials, bearings, brakes, hubs and drums—are completely interchangeable within each capacity range, and are standard production items, readily available. This means smaller replacement parts inventory—lower maintenance costs—and more time on the road.

Whether your trucks are engaged in on-the-road or off-the-road delivery and hauling, specify the improved TDA "3-FOR-1" Letter Series Driving Axles for longer operating life—greater flexibility—lower-cost maintenance.

MAXIMUM INTERCHANGEABILITY!

You have your choice of 3 final drives, with each one interchangeable within its Letter Series—using the same housing, hubs, drums, brakes and axle shafts.



HYPOID SINGLE-REDUCTION!

A rugged single-speed power train that gives the maximum in single reduction performance.

Only on the improved Timken "3-for-1" Letter Series Driving Axles will you find these "YEARS AHEAD" features

Improved Hypoid Gears! Redesigned offset and increased Hypoid gear diameter provide longer gear life, smoother performance, and quieter operation—without sacrificing strength or ratio advantages.

Refined two-speed shift collar and cross shaft! Improved design gives positive locking action, virtually eliminates axle slipping out of gear—reduces gear wear and maintenance. Each set of teeth performs but one function—driving or locking.

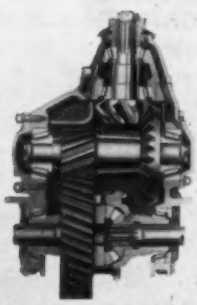
Improved torsion-flow axle shafts—plus new differential gears! More splines per shaft and increased root diameter give greater torsional strength, longer life.

Famous time-proved differential—rugged, reliable and smooth! Extra strong gear body and teeth, plus hot-forged trunnion, give long trouble-free operation even under roughest treatment.

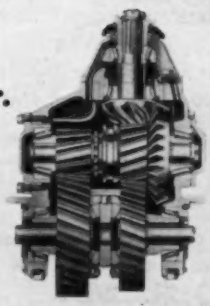
Hot forged steel axle housing! The rectangular form of these high-carbon steel housings is the lightest, strongest shape of housing available today.

Improved "P" Series Power Brakes and "DH" Series Hydraulic Brakes! Available in a complete range of sizes, these advanced brakes offer the most dependable stopping power—lower maintenance cost—easy adjustment and longer service life.

©1956, RS&A Company



SINGLE-SPEED HYPOID-HELICAL DOUBLE-REDUCTION!
This advanced single-speed double-reduction final drive delivers consistently high performance either on or off the road.



2-SPEED HYPOID-HELICAL DOUBLE-REDUCTION!
This final drive gives you the most advanced two-speed double-reduction gearing available. It's the ideal drive for all-around performance either on or off the road.

TIMKEN Detroit AXLES
TIMKEN-DETROIT AXLE DIVISION
ROCKWELL SPRING AND AXLE COMPANY
DETROIT 32, MICHIGAN
The Accepted D A Standard

Plants at: Detroit, Michigan
Oshkosh, Wisconsin • Utica, New York
Ashtabula, Kenton and Newark, Ohio
New Castle, Pennsylvania

WORLD'S LARGEST MANUFACTURER OF AXLES FOR TRUCKS, BUSSES AND TRAILERS

Where there's impact and abrasion you'll find

TISCO MANGANESE STEEL

Down-time for repairs on a costly machine certainly pays no dividends. That is why many crusher manufacturers use rugged, durable TISCO MANGANESE STEEL Wear Parts. Although Taylor-Wharton introduced this remarkable work-hardening material to this country sixty-four years ago, it still surpasses all other alloys in its resistance to heavy impact and abrasion.

In the crusher shown here, Bacon-Pietsch Company, Inc., use TISCO MANGANESE STEEL Jaw Plates, Cheek Plates and Toggle Bearings. As a result, maintenance costs are low for these hard-working machines.

Taylor-Wharton also produces other alloys for special wear conditions. If your product has a wear problem, get in touch with us. We may have just the alloy you need.

TW®

Use TIMANG Weld Rods and Shapes for rebuilding and repairing worn parts made of Manganese Steel.

TAYLOR-WHARTON CO.

DIVISION OF HARSCO CORPORATION

HIGH BRIDGE 3, NEW JERSEY

Birmingham, Ala. Chicago, Ill. Cincinnati, O. Easton, Pa. New York, N.Y.

Illinois Sand and Gravel Firm Gets Big Output from Marion 362 with 2-Yard Bucket

This Marion 362 had been on the job for a number of months when this photograph was taken.

The 2-yard bucket was swinging with clock-like regularity on a 50-foot boom as it lifted heaping loads into waiting trucks.

Everyone on the job, from the owner to the operator, is happy with the way the 362 keeps material flowing to a variety of projects in the central Illinois area.

Air control helps the operator load quickly and spot his load accurately for fast cycle time. Self-cleaning crawlers let him move around the pit with sure footing.

The production peaks of 2,000 tons in 8 hours are comforting to have whenever they are needed, even though the machine needs to produce only 1,200 tons in a shift to keep up with normal demand.

Get the complete story about the 362 and the other machines in Marion's broad line from your nearest Marion Distributor.

Whatever your job requirement, there is a Marion machine of the right size and type for greatest efficiency

MACHINE	SHOVEL CAP. IN CU. YDS.	HOE CAP. IN CU. YDS.	CRANE RATINGS			ASK FOR BULLETIN NO.
			CRAWLER MOUNT MAX.* STABILITY	CRAWLER MOUNT MAX. USABLE	TRUCK MOUNT MAX. USABLE	
MARION 35-M	¾	¾	18T @ 10′	18T @ 10′	25T @ 10′	431
MARION 43-M	1	1-1¼	27T @ 10′	20T @ 12′	35T @ 15′	430
MARION 362	1½	1½-2	43T @ 12′	30T @ 15′		398-D
MARION 87-M	Special Crane		150T @ 12′	75T @ 15′		—
MARION 93-M	2½	—	80T @ 12′	50T @ 15′		397-F
MARION 101-M	3	—	84T @ 12′	57T @ 15′		417-A
MARION 111-M	4	—	169T @ 12′	105T @ 15′		402-C

For Comparison Purposes Only

MARION POWER SHOVEL CO.
MARION, OHIO, U. S. A.

Please send me Bulletin 398D on the Marion 362.

Name ..... Title .....

Company .....

Address .....

City ..... State .....

choose the right screen for the right job

Need a screen with low initial cost?

Need a screen that gives long service on average jobs?

. . . choose

WISSCO-LOY® SPACE SCREENS

Need a screen with high abrasion resistance?

Need lowest cost-per-ton screening?

. . . choose

SUPER-TEMPERED PRECISION SPACE SCREENS

Do you try to match your screening requirements with exactly the right screen—the screen that gives you most for your dollar? Then we suggest that your CF&I representative can help you make that choice. He can offer you *two* top quality space screens—each possessing special advantages, depending upon the type of screening job.

Economically-priced Wissco-Loy Screens, made from alloy steel wire, are designed for jobs where toughness is required, but where abrasive conditions are moderate.

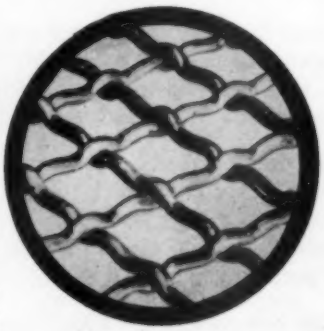
Super-Tempered Screens, made from oil-tempered wire, give long service on jobs where abrasion is expecially severe.

Both these CF&I Space Screens are available in a wide range of standard dimensions, wire sizes, openings and edge preparations—or you can specify any type to meet your own job requirements. For the complete story on Wissco-Loy and Super-Tempered Space Screens, contact your CF&I representative or write direct to Sales and Engineering, 56 Sterling Street, Clinton, Mass.

CF&I **SPACE SCREENS**

THE COLORADO FUEL AND IRON CORPORATION

4460



THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Casper • Denver • El Paso • Ft. Worth Houston • Lincoln (Neb.) • Los Angeles • Oakland • Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Antonio San Francisco • Seattle • Spokane • Wichita

WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia

CF&I OFFICES IN CANADA: Montreal • Toronto • CANADIAN REPRESENTATIVES AT: Calgary • Edmonton • Vancouver • Winnipeg

the ARBA ROAD SHOW and CONVENTION

WHO YOU'LL SEE THERE!

A partial list of exhibitors planning to be there

ACME IRON WORKS • AEROIL PRODUCTS COMPANY, INC. • AEROQUIP CORPORATION • ALLEN INDUSTRIAL PRODUCTS, INC. • ALLIS-CHALMERS MANUFACTURING CO. • AMERICAN BOSCH DIVISION (AMERICAN BOSCH ARMA CORPORATION) • AMERICAN CHAIN & CABLE COMPANY, INC. • AMERICAN HOIST & DERRICK CO. • AMERICAN MANGANESE STEEL (DIVISION OF AMERICAN BRAKE SHOE CO.) • AMERICAN TRACTOR CORPORATION • ARMCO DRAINAGE & METAL PRODUCTS, INC. • ATHEY PRODUCTS CORPORATION • AUSTIN-WESTERN COMPANY • BALDWIN-LIMA-HAMILTON CORPORATION • BARBER-GREENE COMPANY • BARCO MANUFACTURING CO. • BAY CITY SHOVELS, INC. • BLAW-KNOX CO. • WM. BROS. BOILER & MFG. CO. • J. I. CASE COMPANY • CATERPILLAR TRACTOR CO. • CHAIN BELT COMPANY • C. H. & E. MANUFACTURING CO. • CHEVROLET MOTOR CORP. (TRUCK & COMMERCIAL DEPARTMENT) • CHICAGO RAWHIDE MANUFACTURING COMPANY • CHRYSLER CORPORATION (DODGE DIVISION) • C.I.T. CORPORATION • CLARK EQUIPMENT COMPANY • CLEAVER-BROOKS COMPANY • THE CLEVELAND GRAPHITE BRONZE COMPANY • CLEVELAND TRENCHER COMPANY • CONSTRUCTION MACHINERY COMPANY • CONTINENTAL MOTORS CORPORATION • COOK BROS. EQUIPMENT COMPANY • CUMMINS ENGINE COMPANY, INC. • DANA CORPORATION • BUCYRUS-ERIE COMPANY • BUDA DIVISION (ALLIS-CHALMERS MANUFACTURING CO.) • THE BUFFALO-SPRINGFIELD ROLLER CO. • BUTLER BIN CO. • THE EIMCO CORPORATION • ELECTRIC STEEL FOUNDRY COMPANY • ELECTRIC WHEEL COMPANY • E. D. ETNYRE & CO. • EUCLID DIVISION (GENERAL MOTORS CORPORATION) • FORD MOTOR CO. • FRUEHAUF TRAILER COMPANY • FULLER MANUFACTURING CO. • THE GALION IRON WORKS & MFG. CO. • GAR WOOD INDUSTRIES, INCORPORATED • GENERAL ROAD MACHINES, INC. • GMC TRUCK & COACH DIVISION (GENERAL MOTORS CORPORATION) • GOOD ROADS MACHINERY CORPORATION • DETROIT DIESEL ENGINE (DIVISION GENERAL MOTORS CORP.) • DIAMOND IRON WORKS, INC. (GOODMAN MANUFACTURING COMPANY) • K. E. DIETZ COMPANY • EAGLE IRON WORKS • THE FRANK G. HOUGH CO. • HUBER-WARCO COMPANY • HYATT BEARINGS DIVISION (GENERAL MOTORS CORPORATION) • HYSTER COMPANY • INGERSOLL-RAND CO. • INTERNATIONAL HARVESTER CO. • IOWA MANUFACTURING CO. • JACKSON VIBRATORS, INC. • THE JAEGER MACHINE COMPANY • THE JEFFREY MFG. CO. • THE C. S. JOHNSON COMPANY • JOY MANUFACTURING CO. • KALAMAZOO DIVISION (THE NEW YORK AIR BRAKE COMPANY) • KOEHRING COMPANY • KOHLER COMPANY • THE GORMAN-RUPP CO. • W. E. GRACE MFG. CO. • THE HANSON CLUTCH & MACHINERY CO. • HARNISCHFEGER CORPORATION • THE HELTZEL STEEL FORM AND IRON CO. • HENDRIX MANUFACTURING CO., INCORPORATED • HERCULES GALION PRODUCTS, INC. • HERCULES MOTORS CORPORATION • HETHERINGTON & BERNER, INC. • HIGHWAY EQUIPMENT CO., INC. • HOMELITE DIVISION (TEXTRON AMERICAN, INC.) • McKIERNAN-TERRY CORPORATION • MINNEAPOLIS-MOLINE COMPANY • MURPHY DIESEL COMPANY • N. P. NELSON IRON WORKS, INC. • NORDBERG MFG. CO. • NORTHWEST ENGINEERING COMPANY • THE OLIVER CORPORATION • LE ROI DIVISION (WESTINGHOUSE AIR BRAKE COMPANY) • R. G. LE TOURNEAU, INC. • LE TOURNEAU-WESTINGHOUSE COMPANY • LINK-BELT SPEEDER CORP. • LITTLEFORD BROS., INC. • MACWHYTE COMPANY • MARION POWER SHOVEL COMPANY • MASTER VIBRATOR COMPANY • SMITH ENGINEERING WORKS • STANDARD STEEL CORPORATION • STANDARD STEEL WORKS • STOW MANUFACTURING COMPANY • TAMPO MANUFACTURING CO. • THE TEXAS COMPANY (ASPHALT SALES DEPARTMENT) • THE THEW SHOVEL CO. • THE OWEN BUCKET COMPANY • PETTIBONE MULLIKEN CORP. • PIONEER ENGINEERING WORKS, INC. • PORTLAND CEMENT ASSOCIATION • JOHN A. ROEBLING'S SONS COMPANY • SCHIELD BANTAM COMPANY, INC. • SCHRAMM, INC. • SEAMAN-ANDWALL CORPORATION • SEAMAN ENGINEERING & RESEARCH CO. • S K F INDUSTRIES, INC. • THE WHITE MOTOR COMPANY • WOOLDRIDGE MANUFACTURING DIVISION (CONTINENTAL COPPER & STEEL INDUSTRIES, INC.) • THE TIMKEN ROLLER BEARING COMPANY • THE TORRINGTON COMPANY • TWIN DISC CLUTCH COMPANY • UNION CHAIN & MANUFACTURING COMPANY • UNION WIRE ROPE CORP. • UNIT CRANE & SHOVEL CORP. • UNITED STATES STEEL CORPORATION • WALTER MOTOR TRUCK COMPANY • THE WARNER & SWASEY COMPANY • WAUKESHA MOTOR CO. • WISCONSIN MOTOR CORPORATION • WORTHINGTON CORPORATION

Exhibits

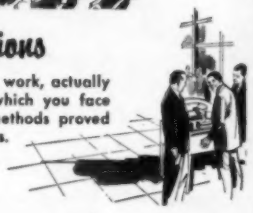
Whatever your interests, you'll find the equipment, materials and supplies you use on display. New models, new methods and current machines are exhibited.

Discussions

Hear internationally-known authorities report on the latest advancements in construction—lead dicussions about new ideas—present details of the hugh vital road program.

Demonstrations

See machines at work, actually doing the jobs which you face each day. See methods proved before your eyes.



Get-togethers

The contacts you make will prove of inestimable value. Experts from every part of the world—every one ready to talk about your problems.

CHICAGO
International Amphitheatre

BUILD BETTER ROADS TODAY • FOR A GREATER AMERICA • AMERICAN ROAD BUILDERS ASSN. 1902

PHILADELPHIA SLAG COMPANY
DIVISION OF ADAMS PRODUCTS CORPORATION
Producers of
CRUSHED SLAG and BITUMI[N]OUS CONCRETE
SWEDELAND, (Montgomery Co.)

June 28, 1956.

"Paid for itself in two years operation"

Plymouth Locomotive Works
Fate-Root-Heath Company
Plymouth, Ohio

Gentlemen:

In February of 1954, we put into service a 35-ton Plymouth Diesel Hydraulic Locomotive, to haul battleship cars of slag from the slag bank to our plant. This locomotive replaced a 70-ton six wheel steam locomotive.

The Plymouth Diesel has done our work most satisfactorily and at a great saving in the cost of operation. The steamer required 3 to 5 tons of coal per day, while the Plymouth Diesel, doing the same work as the steamer, consumes approximately 75 gals of fuel per week.

The savings effected by the use of the Diesel to date, have equalled the cost of the new locomotive. We are very well pleased that we made the change from steam to Plymouth Diesel.

Yours very truly,
Robert F. Peters
Robert F. Peters, Supt.

Plymouth Torqomotive half as big as former locomotive

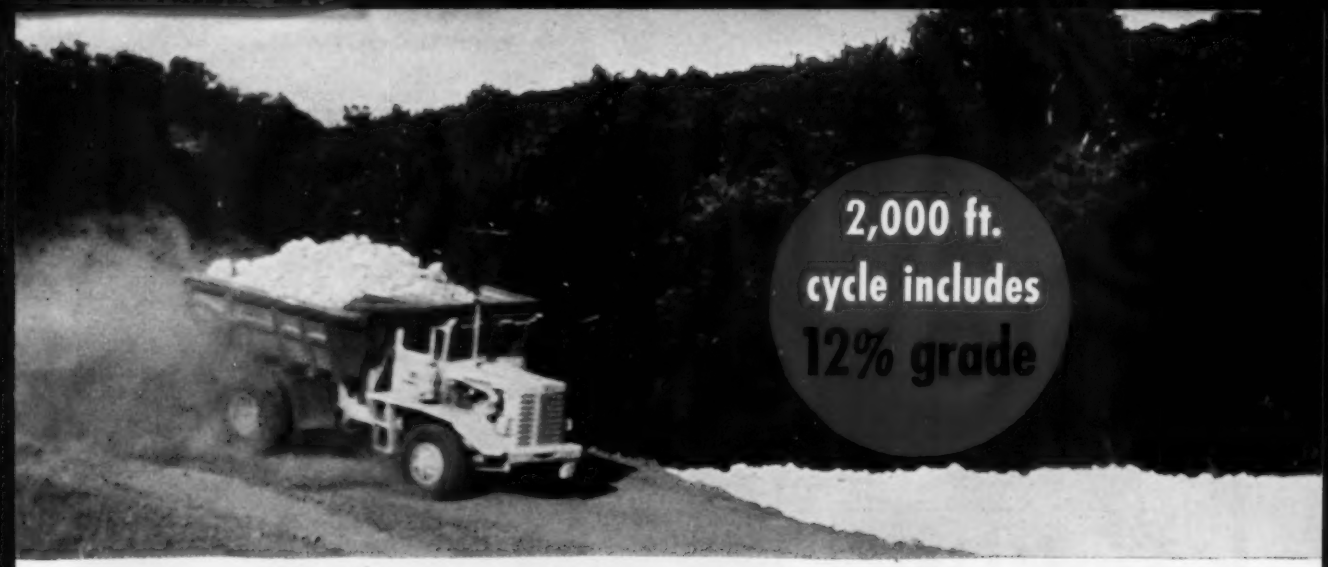
Hauls same loads but saves over $1000 in fuel monthly

Pays for itself in 28 months

PLYMOUTH® TORQOMOTIVES

Maybe a Plymouth can do the same for *you*. Find out. Send a brief outline of your haulage needs for recommendation. Address: Plymouth Locomotive Works, The Fate-Root-Heath Company, Dept. A-15, Plymouth, O.

ALSO BUILDERS OF F-R-H CERAMIC MACHINERY



TWO LOAD-SPEEDING

NO FOOT-BRAKING DOWN-GRADE! Heap-loaded "95" rolls safely down to the fill at 10 mph. Hand-operated Torqmatic brake is standard equipment, gives accurate control at any speed...on any grade.

International® "95" Payhaulers®

average 2400 cu. yds. of rock daily!

High speed (up to 38 mph), 16 cu. yd. capacity, and next-to-automatic operating control of two new International "95" Payhaulers are getting Clarkson Construction Co. record-breaking rock production of 2400 cu. yd. per 10-hour day. Payhaulers are producing this outstanding yardage on the company's 1000-foot cut through dolomite limestone—part of their 7.5 mile, 2-lane highway contract between Bonne Terre and Halifax, Mo.

The Payhaulers are operating on a 2000-foot cycle which includes a 12% grade. On this grade, too tricky and treacherous for Clarkson's other rock haulers, Payhaulers maneuver speedily and safely downgrade —under positive Torqmatic braking control! Payhaulers' high speed of up to 38 mph also permits the fast average round-trip travel time of only 2 min., 45 sec. That's faster than the 3 cu. yd. shovel can load one!

H. D. Brown, project superintendent, says, "The Payhaulers have got all other rock trucks beat. Control we've had with Payhaulers on this job is something we didn't have on any other truck. We've averaged 150 to 162 loads of 16 to 18 cu. yd. per 10-hour day. It's the best production I've ever had!"

Other veteran rock men who have used or seen the International "95" Payhauler in action say the same thing. You'll join them, too! Ask your nearby International Construction Equipment Distributor to give you a demonstration.

"Best Production I've ever had,"

Says H. D. BROWN
Project Superintendent,
Clarkson Construction Co.,
Kansas City, Mo.

BODY UP...DOWN...IN ONLY 12 SECONDS! 3-stage hydraulic hoist gives full-time control. Snubbing assures smooth dumping, gentles body return.

TWO-TON CHUNKS OF LIMESTONE bang into the Payhauler. High-tensile steel sides, triple-section bottom, super-duty "spring cushions," plus strongest frame in "95's" class take rock-shock!

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Pipe-Boom Tractors... Self-Propelled Scrapers and Bottom-Dumps... Crawler and Rubber-Tired Loaders... Off-Highway Trucks... Diesel and Carbureted Engines... Motor Trucks

INTERNATIONAL® CONSTRUCTION EQUIPMENT

International Harvester Company
180 North Michigan Avenue, Chicago 1, Illinois

FOR

Steadier Arc

Steadier Voltage

Smoother, Faster Application

USE

VICTOR

Automatic Rods

Victor automatic hardfacing alloys go on 3 to 4 times faster than manually-applied hardfacing, enable you to make big savings in labor costs. And if you're repairing equipment, cutting down time by ⅔ or ¾ likewise is a terrific saving. You get a more uniform deposit, too, from Victor automatic hardfacing alloys, resulting in longer, more even wear. Check this chart — you'll find there's a Victor type for every hardfacing need.

Learn for yourself how hardfacing with Victor automatic rod reduces labor and repair down time. Ask your Victor dealer for Bulletin 358—or better yet, order a coil of rod NOW and try it on your job.

PROFITABLE DEALERSHIPS OPEN; INQUIRE NOW!

33

VICTOR EQUIPMENT COMPANY

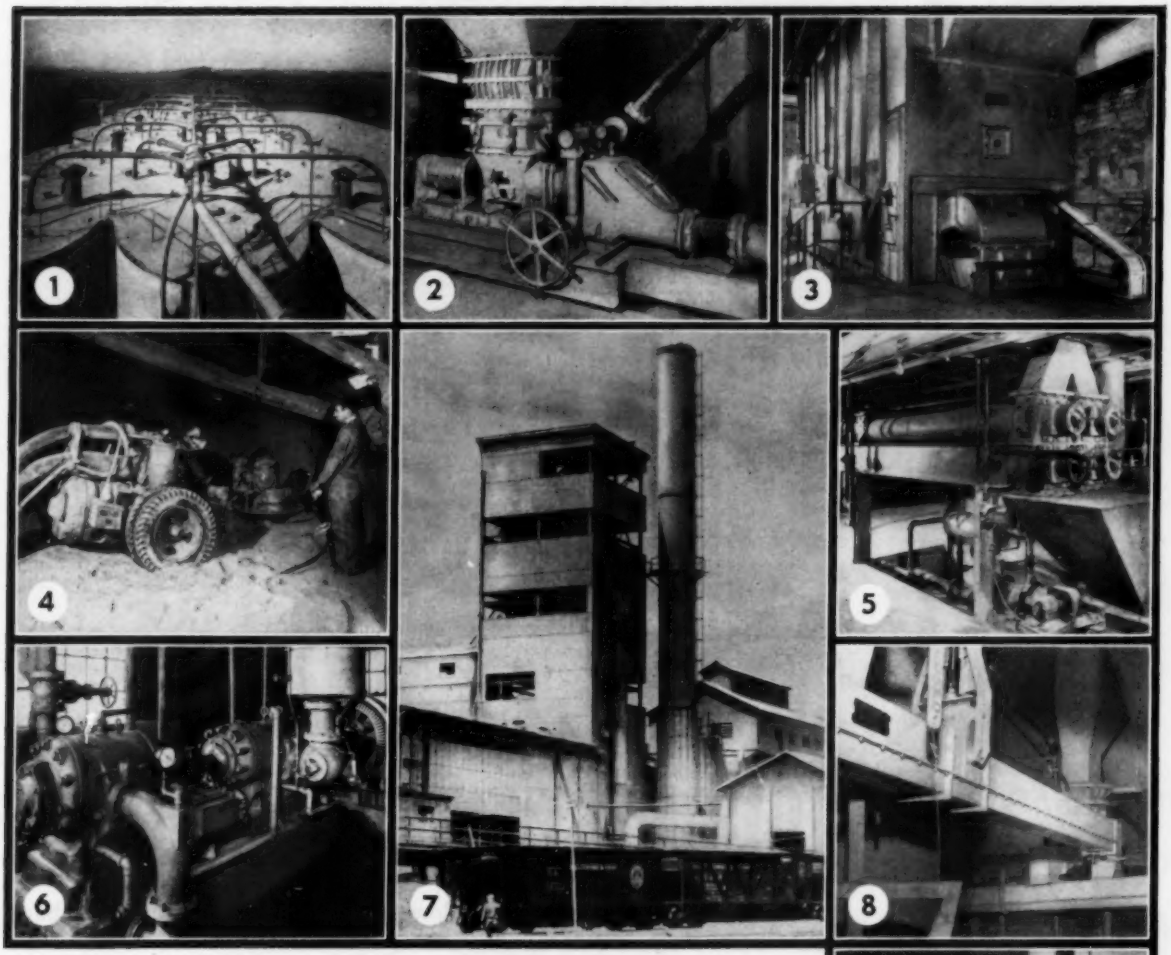
ALLOY ROD AND METAL DIVISION

Los Angeles 59, California • Wakita, Oklahoma

Note even deposit of Victor VA#3 automatic rod on gyratory crusher cones.

TYPE	USES	PROPERTIES AND APPLICATION
VA#1	Crusher Rolls Gyratory Crushers Crusher Mantels Scraper Blades	Rockwell 'C' 54-57 Impact Resistance—good Abrasion Resistance—high AC-DC submerged arc or DC open arc
VA#2	Pinch Rolls Tractor Idlers Tool Joints Coiler Rolls	Rockwell 'C' 50-52 Impact Resistance—good Abrasion Resistance—good Submerged arc only Suitable for multiple passes
VA#3	Roll Crushers Gyratory Crushers Impellors Mill Guides	Rockwell 'C' 54-57 Impact Resistance—good Abrasion Resistance—high For use where abrasion is severe Submerged arc only
VA#4	Tractor Rollers Sheave Wheels Tractor Idlers	Rockwell 'C' 25-28 Impact Resistance—excellent Abrasion Resistance—good Submerged arc only Suitable for multiple passes Machineable
VA#5	Tractor Rollers Sheave Wheels Tractor Idlers Grader Blades	Rockwell 'C' 34-38 Impact Resistance—high Abrasion Resistance—good Suitable for multiple passes Submerged arc only
VA#6	Crane Wheels Roll Necks Pump Sleeves	Rockwell 'C' 38-41 Impact Resistance—high Abrasion Resistance—fair Suitable for multiple passes Deposit machineable Submerged arc only
VA#7	Excellent base for high alloy application. Mine Car Wheels	Rockwell 'C' 36-42 Impact Resistance—excellent Abrasion Resistance—good Suitable for multiple passes Deposit machineable Submerged arc only
VA#8	Tool Joints Grader Blades Scraper Blades Roll Crushers	Rockwell 'C' 51-54 Impact Resistance—high Abrasion Resistance—high Submerged arc only
VT#60	Tool Joints Grader Blades Scraper Blades	Automatic Tungsten carbide wire Abrasion Resistance—excellent (maximum) Deposits are heterogeneous Open arc—DC reverse only

Rod diameters 1/8", 5/32" and 3/16". Standard coil size, 22-1/2" inside diameter, 4" wide, approximate weight 100 lbs.



THE RIGHT TOOLS FOR THE BEST RESULTS

1. Fuller-Kinyon System conveying to silos.
2. Fuller-Kinyon Portable Pump underneath silos.
3. Fuller Inclined-Grate Cooler.
4. Fuller-Kinyon Remote-Control Unloader.
5. Fuller Dry Pulverized-Material Cooler.
6. Fuller Rotary Two-stage Compressor.
7. Fuller-Humboldt Suspension Preheater.
8. F-H Airslide Fluidizing Conveyor.
9. Airveyor Pneumatic Conveying System.

WE ALSO BUILD

Feeders & Rotary Valves
Material-Level Indicators
Motion Safety Switch
Aeration Units
Slurry Valves

The experience of thirty years of research, designing, and building equipment for the chemical process industry, has given Fuller engineers a vast amount of "know-how", knowledge which is passed along to the user in better and more efficient equipment. Such experience is something that is difficult, if not impossible, to write into specifications or show on blue prints, yet is inherent in Fuller engineering and equipment.

This experience, and a large capable staff, place us in an excellent position to assist you in determining the most efficient equipment for conveying, cooling, and preheating dry pulverized and granular materials; application of compressors and vacuum pumps for handling air and gases; feeding and aeration of dry bulk materials.

Your first step toward achieving efficiency, at the lowest possible cost, is to call in a Fuller engineer to review your requirements and to make specific recommendations.

Bulletin G-3, "Fuller Equipment for the Process Industries", will give you a comprehensive preview of services rendered and equipment manufactured by Fuller. Write today . . . we'll gladly send you a copy.

FULLER COMPANY
100 Bridge St., Catasauqua, Pa.

SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION

Chicago • San Francisco • Los Angeles • Seattle • Kansas City • Birmingham

G-136
3657

Fuller

DESIGNERS AND BUILDERS OF BETTER EQUIPMENT FOR THIRTY YEARS

GG WIDE BASE

ROCK GRIP

RG WIDE BASE

ALL NON-SKID

SUPER MILEAGE LUG

RIB EXCAVATOR

GROUND GRIP

to help you beat the clock on the job!

TOUGHEST TIRES EVER BUILT

Today's fast schedules make breakdowns costly. That's why it pays to have the world's toughest tires on your rolling equipment.

Firestone has developed the strongest nylon tire ever made. The nylon cords are conditioned by Firestone's exclusive *Gum-Dipped* Safety-Tensioned process which controls tire stretch and tread-cracking. Firestone nylon plies resist impact breaks in the hardest going. They give you extra protection against flex breaks, heat failure and deterioration from moisture.

Firestone nylon tires beat breakdown losses on the job. And nylon-armored long life adds up to the lowest cost per-hour operation of any truck or construction tire. That's why it pays to use Firestone—and the cost records prove it!

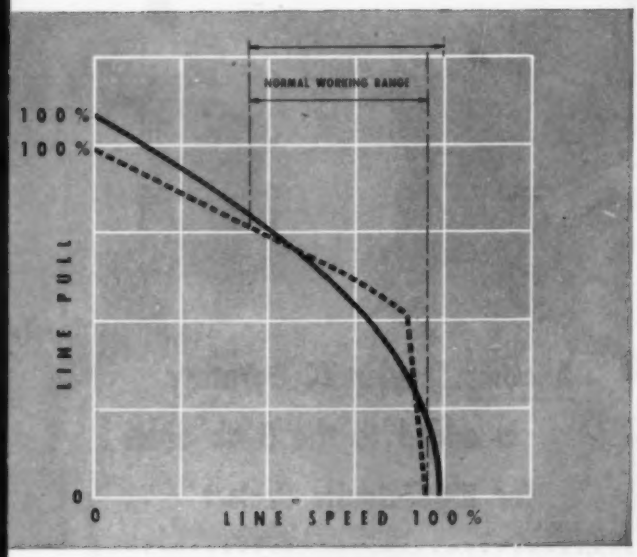
SPECIFY GUM-DIPPED SAFETY-TENSIONED NYLON TIRES BY . . .

Firestone

Enjoy the Voice of Firestone on radio or television every Monday evening over ABC

Copyright 1956, The Firestone Tire and Rubber Co.

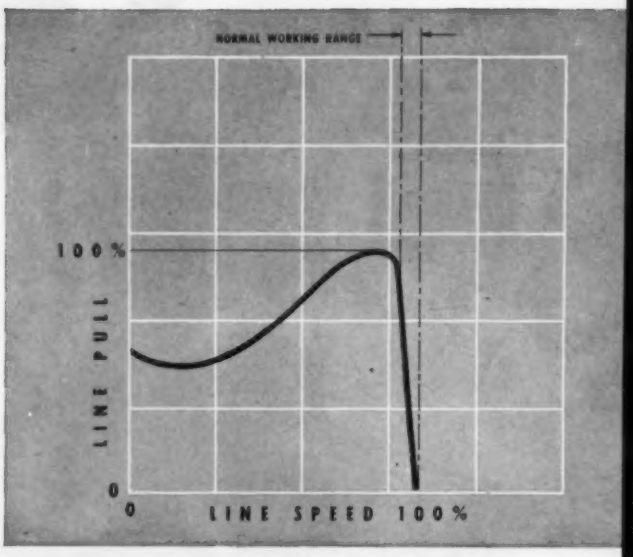
LIMA teams A.C. electric motor with torque converter for power-on-demand through wide operating range



Power Performance of LIMA'S New Optional Unit:

A.C. Electric motor with torque converter drive. [Diesel-torque converter curve (dotted line) shown for comparison.]

With this drive, even under extreme loading, the motor will pull down in speed only a very small amount. It can never be stalled. The line pull will constantly increase through a long pull down speed range, depending upon the load applied.



Power Performance of A.C. Electric Motor with Direct Drive:

The motor speed and torque vary as shown for line speed and pull

With a pull down in speed of only 3% to 5%, torque rises too fast. The motor will stall quickly after peak torque is reached. Workable speed range is small, stalls are frequent.

Lower First Cost — Reduced Maintenance

Now another quality-extra is available on all Lima machines. It's Lima's new electric power unit designed to give you full power-on-demand through a wide operating range.

Combining a single A.C. motor with a single stage torque converter, this drive matches, *electrically*, diesel-torque converter performance. It powers all motions and permits application of full power to any one motion as required. Under extreme loading, required power output is supplied at constant motor speed . . . and the motor can't stall or burn out.

The simplified electrical setup—with single A.C. motor and no complicated electrical controls—means lower first cost. Electrical maintenance is reduced to a minimum, and servicing does not require highly trained personnel.

Just check the performance curves above. You'll quickly see that Lima's quality-built electric power unit provides the ideal answer for *your* jobs calling for electrically powered machines. You'll get maximum power performance under all operating conditions. Get full details now from your nearby Lima distributor . . . or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

CAPACITIES

Shovels ½ yd. to 6 yds. Cranes to 110 tons. Draglines variable. Smaller capacities available on rubber.

Baldwin-Lima-Hamilton Corporation Construction Equipment Division also manufactures Austin-Western Crushing, Washing and Screening Plants at its Lima, Ohio plant . . . and Madsen Asphalt Mixing Plants and equipment at its La Mirada, California, plant.

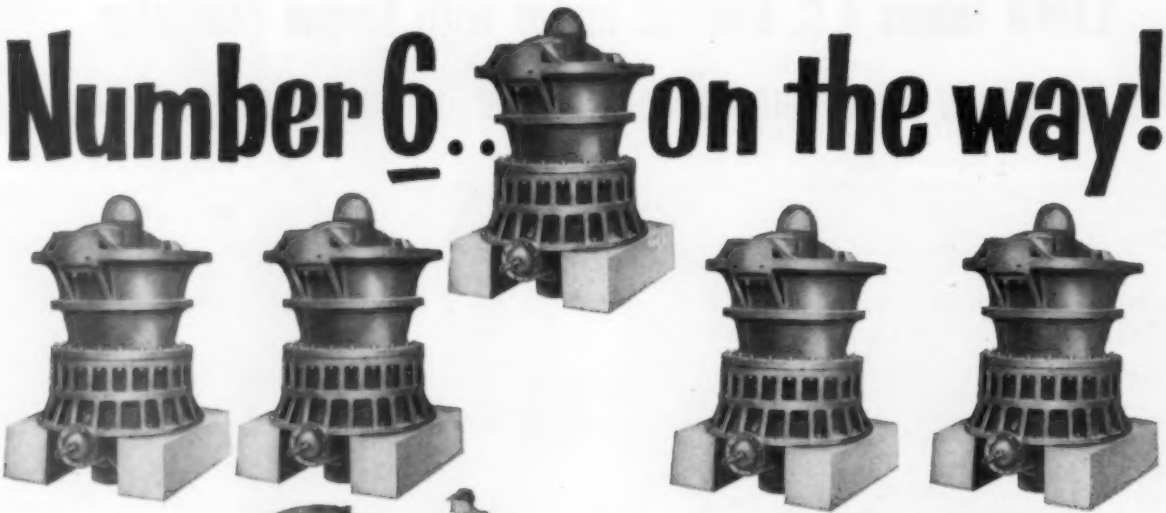
LIMA SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

BALDWIN - LIMA - HAMILTON

Construction Equipment Division — LIMA WORKS

OTHER DIVISIONS: Austin-Western • Eddystone • Electronics & Instrumentation • Hamilton • Loewy-Hydropress • Madsen • Pelton • Standard Steel Works

Number 6... on the way!



Another Traylor TC Gyratory is added to the 5 on order for Big Taconite Project

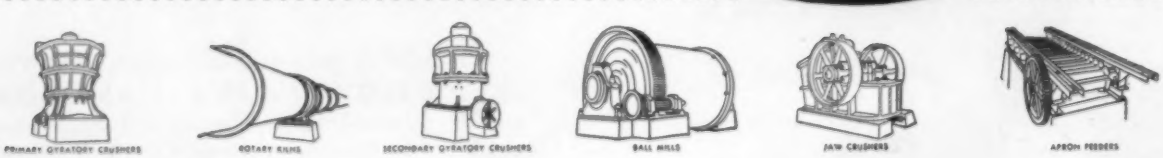
Profitable production of iron ore from low-grade Taconite calls for the most modern, efficient methods and equipment. That's why Traylor Gyratories were the choice for both primary *and* secondary reduction at one of the extremely hard Taconite-bearing ore properties.

The initial order included a Gyratory Crusher with 60″ receiving opening and 102″ diameter crushing head, this huge TC Primary Crusher takes chunks of ore the size of a flat-top desk and reduces them to 12″ at the rate of 4,000 long tons an hour. Four Traylor 36″ Gyratories were included on the original order . . . to take the 12″ ore and reduce it to minus 5″ in the secondary crushing operation. Now . . . we've received an order for another 36″ Gyratory to join the five now being built.

For complete specifications and description of the outstanding features of Traylor TC Gyratory Crushers, send for your copy of Traylor Bulletin #126.

TRAYLOR ENGINEERING & MFG. CO.
857 MILL ST., ALLENTOWN, PA.
SALES OFFICES: New York · Chicago · San Francisco
CANADIAN MFRS: Canadian Vickers, Ltd., Montreal, P.Q.

Traylor



LAY THAT PISTOL DOWN PAL

There's an easier way out of your bearing troubles

Russian roulette may seem to be the easiest and quickest way out when bearings start to go and production starts to stop. But quicker still is a replacement from an authorized **SKF** distributor. He's the man to see for *all* types of anti-friction bearings and pillow blocks, and he's the man who will give you prompt service 24 hours a day. This factory trained specialist is ready to help you select the right bearing for the job. His broad experience in solving problems of maintenance means proper guidance in protecting your bearings for longer life. Doing business with the right distributor—the **SKF** distributor—is good business and good assurance of getting the bearings you need when you need them.

7746

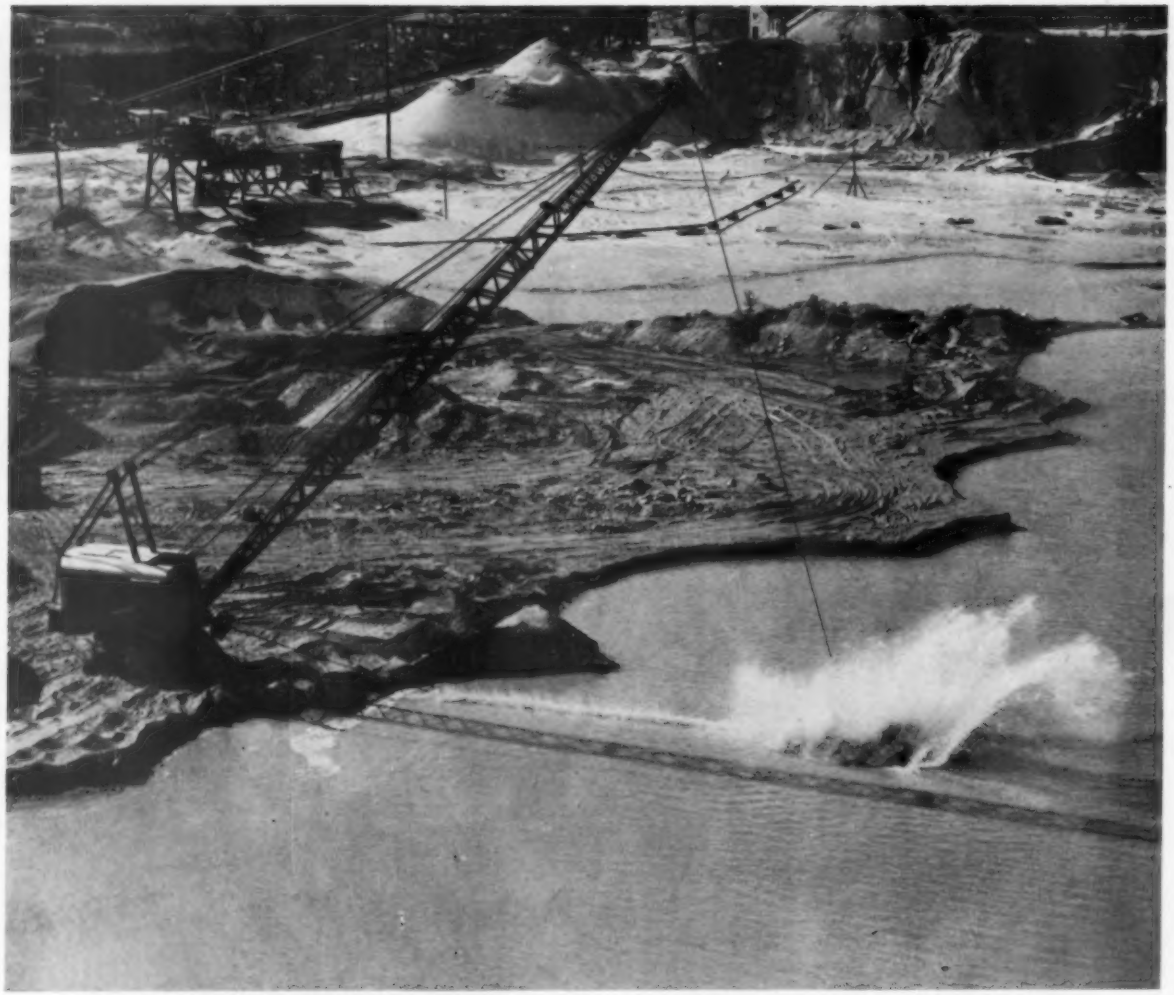
SKF®

EVERY TYPE—EVERY USE

Ball Bearings
Cylindrical Roller Bearings
Spherical Roller Bearings
Tapered Roller Bearings ("Tyson")

*Reg. U.S. Pat. Off. Tyson Bearing Corporation

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.



Big Producer

Manitowoc 2-yd. Model 3000 Moves up to 2500 yards in 8 hours

Put a Manitowoc in your pit and watch daily production figures go up! That's what State Washed Sand and Gravel Co. of Milwaukee did when wet pit conditions called for a big output dragline. The company's 2-yd. Manitowoc Model 3000 rig with an 80′ boom has handled as much as 2500 yards of sand and gravel in an 8-hour day. During the year-and-a-half on the job, machine downtime and maintenance has been negligible.

Big Production

Advanced Manitowoc engineering has eliminated all but 17 gears and pinions for direct power flow from the engine to the bucket. This simplicity of design is possible with Manitowoc's exclusive sliding pinion arrangement which permits the use of one set of clutches to drive travel, swing and boom hoist.

Greater Stability

Long, wide-spread crawlers and a rugged, one-piece carbody give you the rock-steady stability needed for full-capacity buckets at long reach. A low center of gravity assures perfect balance for complete safety and top productivity. Large diameter roller path and big main rollers insure even load distribution and perfect stability.

Greater Operator Efficiency

These optional features will enable your operator to always work at top capacity: *Torque Converter* tailors power output to the need. You get smooth performance in every phase of operation. *Air Controls* make operator's job easier, less fatiguing without destroying important "feel" of the rig. *Swing Brake* — manual or air type — slows swing speed and holds the unit in exact position for precise spotting.

Compare Manitowoc!

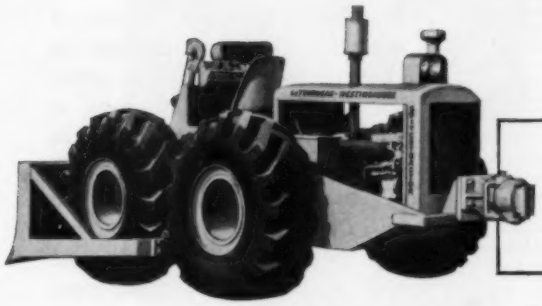
Your helpful Manitowoc distributor has complete information and specifications on the Manitowoc Model 3000. Compare this unit with comparable rated rigs and you'll put a Manitowoc in your pit today!

MANITOWOC ENGINEERING CORP. · MANITOWOC, WIS.

MANITOWOC
SHOVELS 1-5½ YD. · CRANES 20-100 TON
STEEL FIEND

NEW
double-duty
SwitchTractor

Famous high-speed work-and-run tractor now available with standard railroad couplers. Railroad drawbar attachment now makes this famous high-speed tractor even more versatile, gives you the plus value of a go-anywhere off-track switcher for car-spotting work.



SwitchTractor

dozes, hauls, switches freight cars

Ten years hard use has improved and perfected the work-and-run Tournatractor. Thousands have proved their value in hauling, dozing, pushing, grading, scarifying, and compacting in practically every country in the world.

Doubles value of Tournatractor

Now — with the new *SwitchTractor* application—this versatile unit gives you added utility. Equipped with standard railway coupler at the rear, SwitchTractor does double-duty, switches freight cars on your siding, in yard or pit. With wide 8'4½" tire gauge, rubber-tired switcher straddles tracks of all gauges.

SwitchTractor often eliminates the need for private switch engines and engineers, saves charges and delays of railroad switch service. Your single SwitchTractor and operator may well handle all your scattered tractor-dozer work — plus whatever freight switching is required.

Off-track travel cuts switching time

Rolling on big, low-pressure rubber tires, 208 hp machine always takes the shortest route to the job. SwitchTractor can either push rail cars (with its dozer or push-plate), or pull with its coupler-equipped drawbar at rear. Tractor can start 18 empty or 5 loaded freight cars, move them up a 1% grade easily.

60% vs 30% coefficient of friction

Rolling on big rubber tires over ballast and ties, not on steel wheels over steel rails, SwitchTractor develops much more coefficient of friction (60% compares to 30%) than track locomotive of *twice* its weight. That means you have plenty of tractive power.

Worthwhile savings with SwitchTractor

If you have to move freight cars in your operations, investigate this versatile new SwitchTractor. Get all the facts on how this coupler-equipped go-anywhere tractor can save money for you in equipment and manpower economies.

SwitchTractor—Trademark, Tournatractor—Trademark Reg. U.S. Pat. Off. ST-1075-M-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

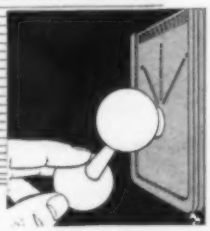
A Subsidiary of Westinghouse Air Brake Company

ARBA

See you at the ROAD SHOW • Chicago • January 28-February 2, 1957

Are you losing 10% of a day's production every time you change crusher setting?

One-man, One-minute PRODUCT CONTROL



● On some gyratory crushers, it takes 45 minutes and longer to change setting for different product size — in many instances, it takes hours. But even 45 minutes of downtime represents about 10% of your day. You don't have to put up with this lost production —not if you install the *Hydrocone* crusher, the crusher with one-man, one-minute product control.

With the *Hydrocone* crusher (and *only* with this modern crusher) you can change product size at the flick of a switch. Compensating for wear is accomplished just as easily. And if the *Hydrocone* crusher stops under load, just flick the switch and you're in business again.

Get all the facts about the *Hydrocone* crusher. See your A-C representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin. Ask for Bulletin 07B7145B.

A-4931

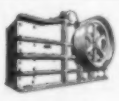
Hydrocone is an Allis-Chalmers trademark.

A-C ALLIS-CHALMERS

ALLIS-CHALMERS

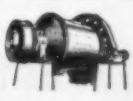
Hammermills

Vibrating Screens



Jaw Crushers

Gyratory Crushers



Grinding Mills

Kilns, Coolers, Dryers

7-Ton GIW Ni-Hard drop ball, produced by Georgia Iron Works Co., Augusta, Ga., gave outstanding service in secondary fragmentation of hard rock in granite quarry. Check the facts in caption at right.

The user, Consolidated Quarries, wore down a 12,000-pound forged steel ball to 5,000 pounds in six months, a loss of 7,000 pounds. In the same amount of time, the quarry's 14,000-pound GIW Ni-Hard ball lost only 1,880 pounds, a solid demonstration of the durability and economy of Ni-Hard iron. View shows Ni-Hard drop ball in the Consolidated quarry, Lithonia, Georgia, where some 1,000,000 tons of crushed granite are turned out each year.

4 to 1 longer life crushing granite! Ni-Hard ball outperforms forged steel

Four times the life means a big reduction in costs for rock crushing.

The user, Consolidated Quarries, compared the life of this GIW Ni-Hard* drop ball with a forged steel ball. Both working side-by-side in a Georgia granite quarry. Crushing unusually hard rock . . . comprising 60% feldspar and 35% quartz.

Why do Ni-Hard drop balls and skull crackers outperform those of other materials?

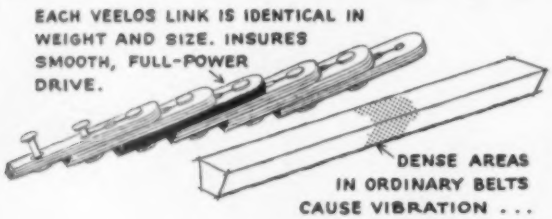
Primarily, because Ni-Hard balls retain their working weight longer. They keep right on working because this nickel-chromium white iron combines needed wear resistance with ability to take the shock of jolts against quarry rock.

Specify your next drop ball in this economical, abrasion-resisting iron. See how it stays on the job smashing hard rock and saving hard cash. Georgia Iron Works Co., Augusta, Georgia, is an authorized producer of Ni-Hard drop balls and other Ni-Hard castings in all common forms and shapes.

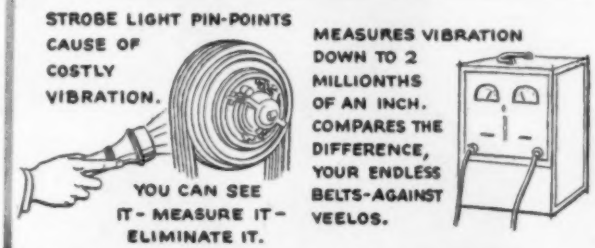
*Registered trademark

INCO TRADE MARK **THE INTERNATIONAL NICKEL COMPANY, INC.** 67 Wall Street New York 5, N. Y.

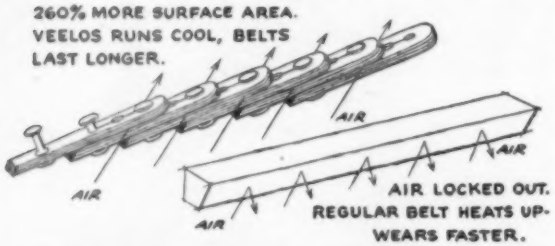
Six Reasons Why Veelos Adjustable V-Belts Are Better For Your Drives!


EACH VEELOS LINK IS IDENTICAL IN WEIGHT AND SIZE. INSURES SMOOTH, FULL-POWER DRIVE.
DENSE AREAS IN ORDINARY BELTS CAUSE VIBRATION . . . MACHINE WEAR

1. Balanced construction of Veelos Belts assures you faster, cleaner work, less rejects . . . less bearing wear. Each link and stud is identical in size and weight. Ordinary belts have varying spots of density which cause excess vibration—chatter marks, machine wear.


STROBE LIGHT PIN-POINTS CAUSE OF COSTLY VIBRATION.
YOU CAN SEE IT - MEASURE IT - ELIMINATE IT.
MEASURES VIBRATION DOWN TO 2 MILLIONTHS OF AN INCH. COMPARES THE DIFFERENCE, YOUR ENDLESS BELTS-AGAINST VEELOS.

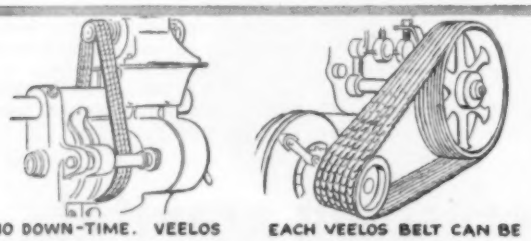
2. Electronic proof—up to 90% less vibration! With a vibration analyzer, you see, on your own machine, how Veelos belts decrease vibration up to 90% over any belt you're now using. This amazing Veelos test pin-points the belt that has the "invisible shakes."



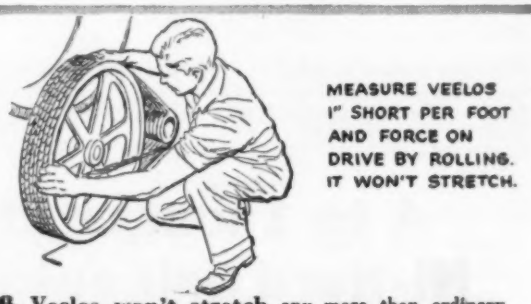
3. Cooler running—long life! Veelos breathes! Constant circulation of air keeps Veelos running smooth. Regular V-belts have no chance to cool, heat builds up from the inside . . . causes slippage, wastes power, heats bearings, reduces belt life.

AREA CONTACT
POINT CONTACT
PERFECT VEELOS FIT. EXTRA THICKNESS AND MACHINE-CUT SIDES PREVENT BOTTOMING. MEAN CONSTANT POWER.
POWERLESS POINT CONTACT OF ORDINARY V-BELT. BULGES, SLIPS, CAUSES UNEVEN SHEAVE WEAR.

4. Greater flexibility reduces slippage! Sectional construction, beveled links allow greater flexibility, longer belt life. Each link moves around sheave independently and maintains full contact, constantly. Full area contact allows shorter centers, smaller sheaves.


NO DOWN-TIME. VEELOS FITS ANY DRIVE - WITHOUT DISMANTLING.
EACH VEELOS BELT CAN BE ADJUSTED - NO NEED FOR EXPENSIVE MATCHED SETS.

5. Simple installation "knocks out" down-time! Saves up to 50% installation time on outboard bearing drives, more when belt length isn't in stock. No resetting, tilting or moving motors. Veelos can be made any length, can be changed by adding or removing links.



6. Veelos won't stretch any more than ordinary endless V-belts when it is properly installed. *Remember—measure Veelos 1" short per foot and roll on drive as tightly as possible.* With the first few revolutions Veelos studs accept a permanent set into the sections they connect.

4 TYPES—FOR *ALL* DRIVES

REGULAR For general service
OILPROOF For oily and hot drives
COATED For wet or oily drives
STATIC-CONDUCTING For explosive atmosphere

VEELOS
THE BALANCED LINK V-BELT
Known as Veelink outside U.S.A.

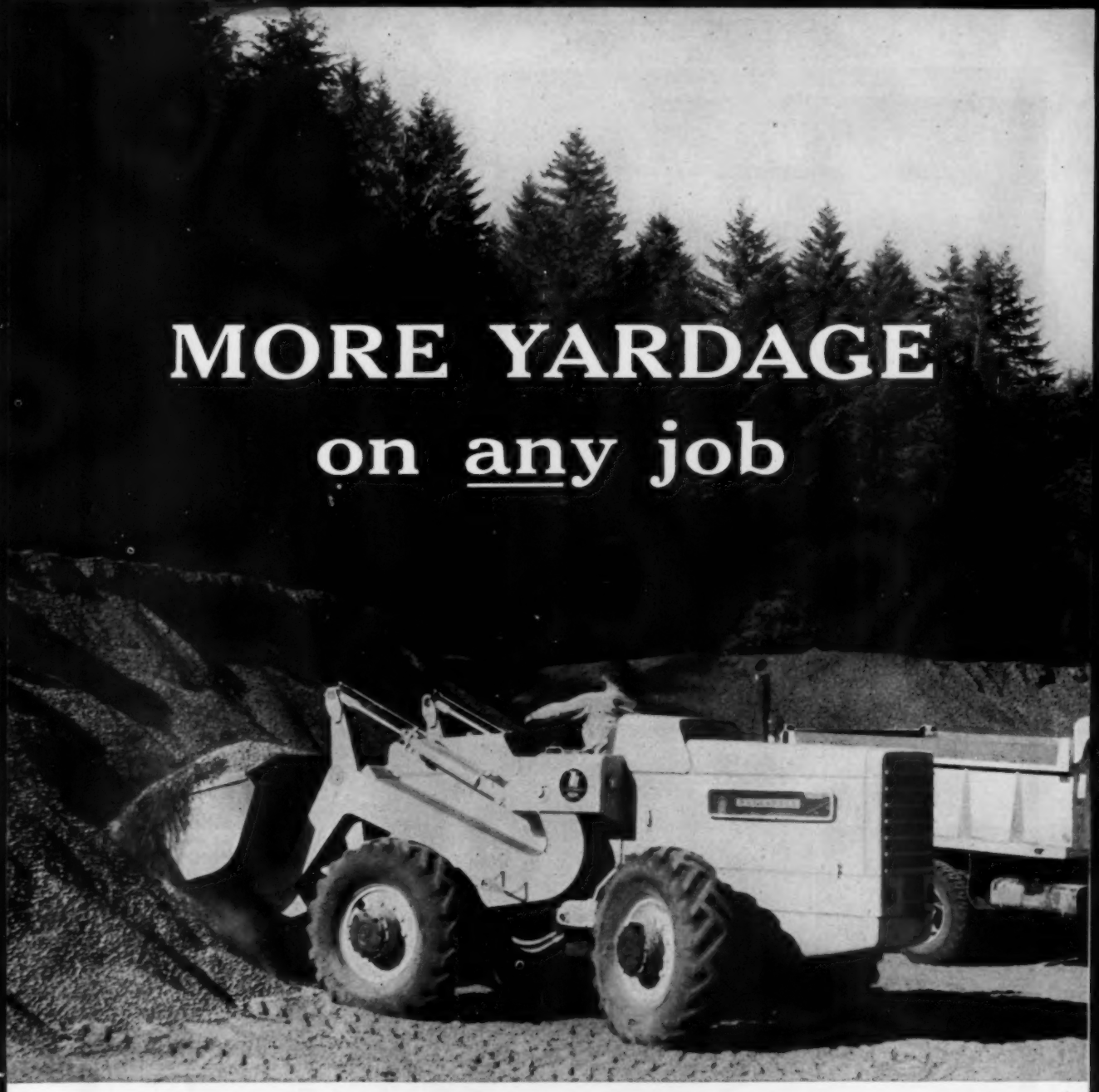
Write for free Veelos Data Book or Veelos Vibration Demonstration to:

MANHEIM
Manufacturing & Belting Co.
412 Stiegel St., Manheim, Pa.

"Industrial Belt Specialists Since 1911"

For all sizes and types of drives. Double-V available for serpentine drives.

© M.M.&B. Co. 1956



more yards per load . . . more loads per hour

DIG MORE Powerful pry-out action and 40° bucket tip-back at ground level get full bucket loads with less spillage loss. Power-transfer differentials provide sure-footed traction for digging power.

CARRY MORE Bucket carry position is close and low for maximum stability. Hydraulic system shock absorber cushions loaded bucket—smooths the ride—permits higher carrying speeds with less spillage.

DELIVER MORE Since you get MORE to begin with and keep MORE while traveling at higher speeds . . . with less spillage in both instances . . . the result—you deliver more yards per load and more loads per hour.

Now you have a choice of three sizes of 4-wheel-drive "PAYLOADER" tractor-shovels, each with *all* the more-productive features pioneered and proven by The Frank G. Hough Co.

They have power-transfer differentials—an exclusive "PAYLOADER" tractor-shovel feature that maintains effective traction on mud, gravel, ice and snow.

They have "no-stop" power-shift transmissions and torque converters . . . planetary final drives . . . power-steering and 4-wheel power brakes.

They have the exclusive bucket motion with 40° bucket tip-back at ground level and powerful pry-out action.

For proof of their superior performance and greater productive capacity on *your* job, ask your "PAYLOADER" distributor for a demonstration.

THE FRANK G. HOUGH CO. 3
750 Sunnyside Ave., Libertyville, Ill.

Send full data on 4-wheel-drive "PAYLOADER" tractor-shovels.

- ☐ **model HO 2¼ yd. payload; 1¾ yd. struck**
- ☐ **model HH 1¾ yd. payload; 1½ yd. struck**
- ☐ **model HU 1½ yd. payload; 1 yd. struck**

NAME _____

TITLE _____

COMPANY _____

STREET _____

CITY _____

STATE _____

PAYLOADER®
MANUFACTURED BY
THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

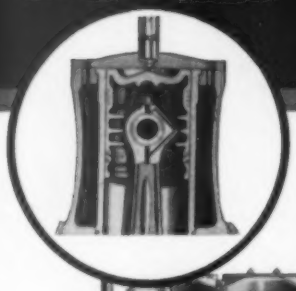
Look at the evidence of

MURPHY

"TRUE DIESEL" OPERATION

Look inside a Murphy Diesel for the reasons why Murphy engines are noted for economy, dependability and long life. You'll find design features ordinarily found only in large diesel engines . . . the "true diesel" features offered by no other engine in Murphy's size and power range.

Look for these features in your next diesel engine. Ask your Murphy Diesel Dealer to explain the advantages of "true diesel" operation for your power requirements.

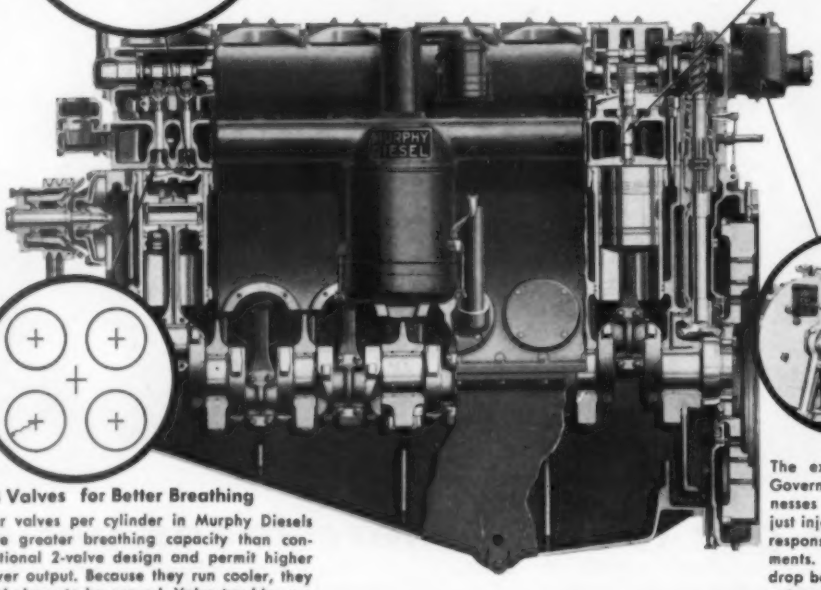


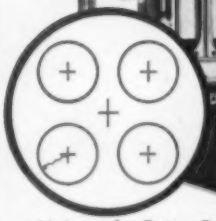
Plain, Open Combustion Chamber

The Murphy Diesel's plain, open combustion chamber, like that of time-tested larger engines, assures *complete* combustion. Murphy owners get maximum power from each drop of fuel with less engine wear.

Precisely Controlled Fuel Injection

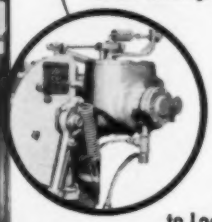
In the Murphy Diesel, fuel injection for each cylinder is accurately controlled by a simple injector unit which serves as both pump and nozzle. High pressure fuel lines are eliminated. There is no erratic, irregular injection, no after-dribbling or air binding.





4 Valves for Better Breathing

Four valves per cylinder in Murphy Diesels have greater breathing capacity than conventional 2-valve design and permit higher power output. Because they run cooler, they rarely have to be ground. Valve troubles are virtually unknown.



Instant Response to Load Change

The exclusive Hydraulic Servo-Type Governor on a Murphy Diesel harnesses lubricating oil pressure to adjust injector controls for instantaneous response to changing power requirements. If lube oil pressure should drop below a safe level, the governor automatically shuts off the engine.

350-Ro

MURPHY DIESEL COMPANY

5307 W. Burnham St., Milwaukee, Wisconsin

SALES . . . PARTS . . . SERVICE

Throughout the Nation

MURPHY DIESEL

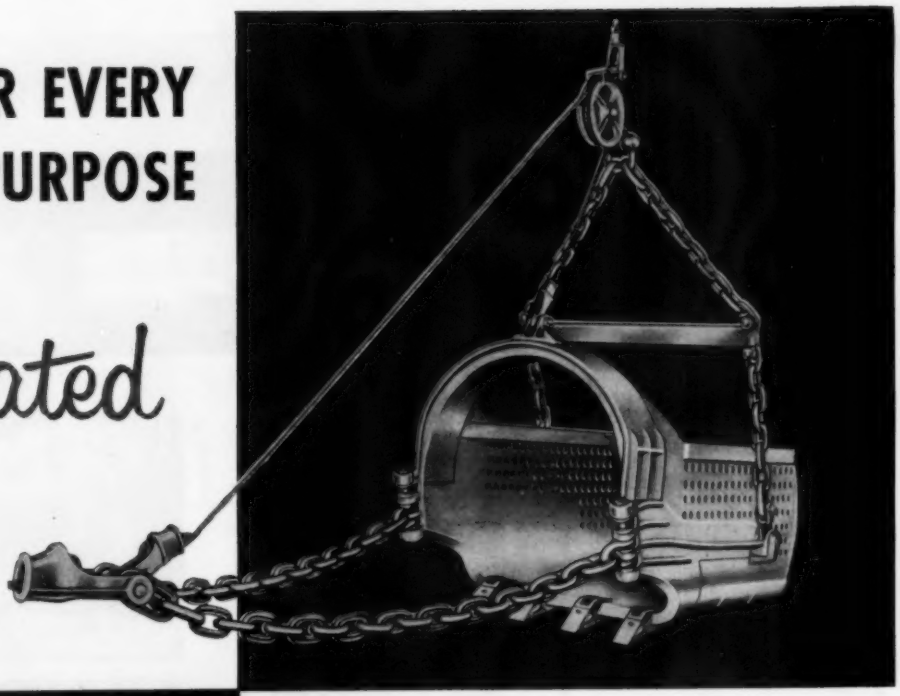
Heavy-Duty Power

for Rock Crushing

Murphy Diesel Engines and Power Units are available in sizes from 96 to 264 H.P. Engine speeds are 1200 and 1400 rpm. "Packaged" generating units from 64 to 165 K.W.

A TYPE FOR EVERY DIGGING PURPOSE

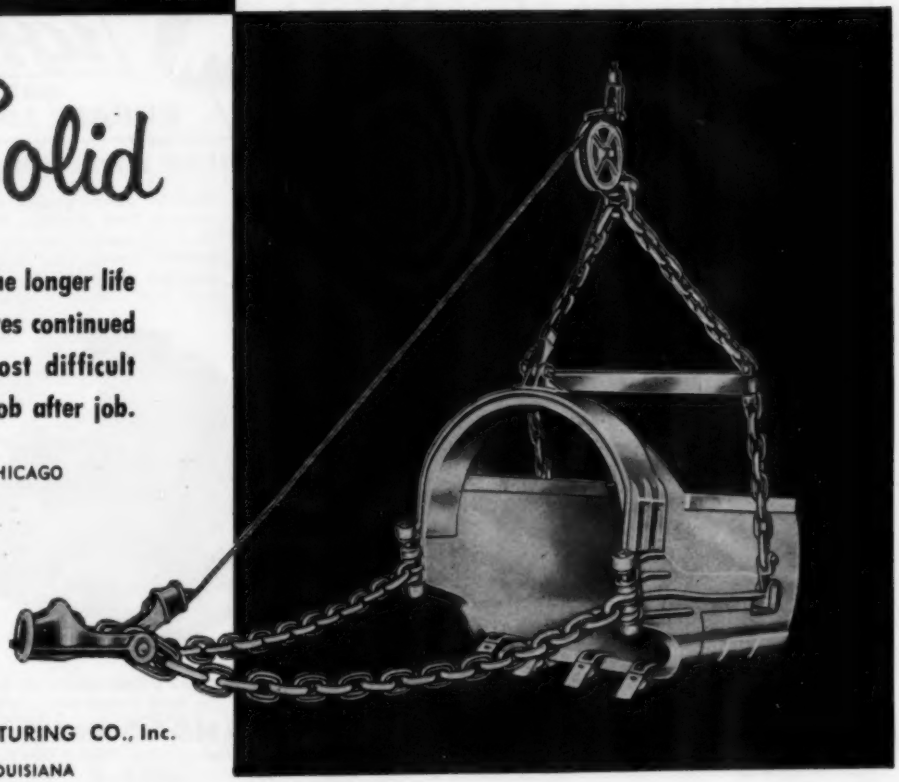
Perforated



HENDRIX
DRAGLINE BUCKETS

¼ to 40 Cubic Yards

Solid

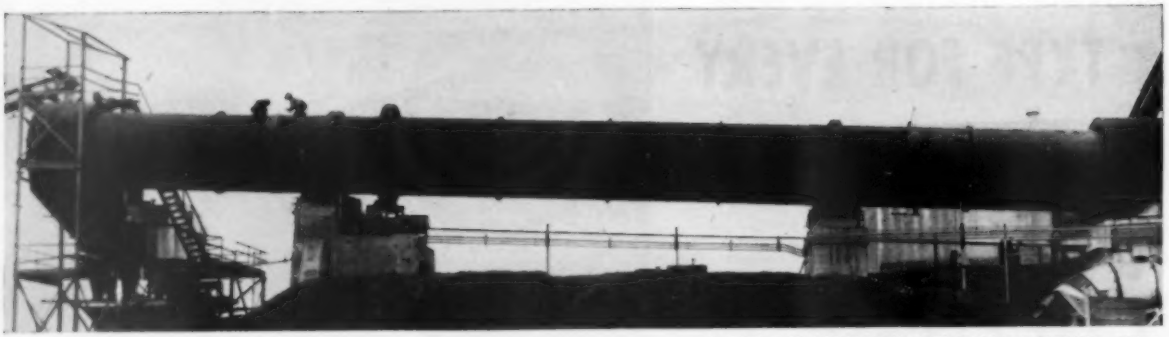


Perforated or Solid . . . . the longer life of a Hendrix Bucket assures continued PROFITS on even the most difficult digging operation . . . . job after job.

See you at the ROAD SHOW — CHICAGO
Jan. 28-Feb. 2, 1957

Hendrix Lightweight Dragline Buckets

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA



9½'x125' NODULIZING KILN INSTALLED, COLUMBIA, TENN.

We design and manufacture

ROTARY KILNS

•

DRYERS

•

COOLERS

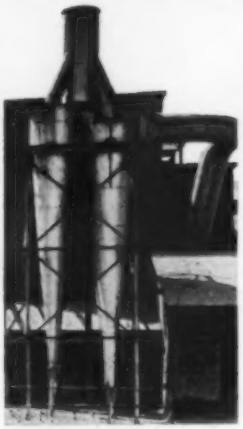
•

LIME HYDRATORS

•

DUST COLLECTORS

and design the plants in connection with the same.



NEW HIGH EFFICIENCY DUST COLLECTOR

7'x60' CLAY DRYER INSTALLED IN HENDERSONVILLE, N. C.

W. P. HEINEKEN, INC.

ENGINEERS MANUFACTURERS

50 BROAD STREET • NEW YORK 4, N.Y.

"CROSS HEXCREEN"

A Honey of a Screen for

More Strength

More Capacity

and

Engineered Performance

look for this stamp on all "Cross" Products

The Mark of PLUS QUALITY for PLUS PERFORMANCE

CROSS Self-Aligned Steel Sections and Decks for VIBRATING — SHAKING — REVOLVING SCREENS

CROSS ENGINEERING COMPANY

Manufacturers @ Carbondale, Pennsylvania @ Telephone 300

"CROSS" SERVICE AGENCIES in Principal Cities

New York, N. Y. — 101 Park Ave. — Murray Hill 5-0253

For Handling Abrasive, Fine Mesh Solids at Minimum Cost!

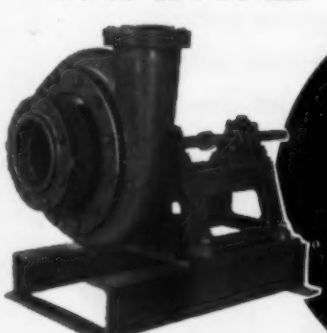
Lightning

MODEL RU

RUBBER LINED PUMPS

OUTLAST METAL LININGS 5 TO 10 TIMES!

Ideal for handling silica sand, glass sand, coal silt, remnants from classifiers or any other abrasive slurry. The simple design of the pump and its long wearing construction assure long, trouble-free service life, high operating efficiency and a minimum of care. Available in 6" x 8" and 4" x 6" sizes.



- NO PERIODIC ADJUSTMENTS
- ONLY THREE WEARING PARTS
- NON-CLOGGING IMPELLER
- STAINLESS STEEL SHAFT

AD 101

A new bulletin completely describing this pump is available . . . write

KANSAS CITY HAY PRESS CO.

Manufacturers of Heavy-Duty Lightning Sand and Gravel Pumps

801 Woodswether Road Kansas City, Missouri

toughest

Royal Blue rope is made of the *toughest* rope wire ever developed... Roebling Type 1105

John A. Roebling's Sons Corporation, Trenton 2, N. J., Subsidiary of The Colorado Fuel and Iron Corporation BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 2340 GLENDALE-MILFORD RD., EVENDALE • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • PITTSBURGH, 1725 HENRY W. OLIVER BLDG. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, 19 RECTOR ST., NEW YORK 6.

"Our equipment keeps on rolling—

We use Colmonoy No. 2, the Best Hard-Facing!"

You get top abrasion resistance and easy welding with low-cost Colmonoy No. 2 hard-facing electrodes. Use them on tractor treads, dipper teeth, ditcher teeth, truck beds, dragline buckets, any steel or manganese steel part.

Excellent arc stability and good flowing qualities make these low hydrogen AC-DC electrodes a cinch to apply. A Colmonoy No. 2 deposit has a Rockwell C hardness of 50 to 60.

Write today for more information about Colmonoy No. 2 and the rest of the Colmonoy family of hard-facing alloys.

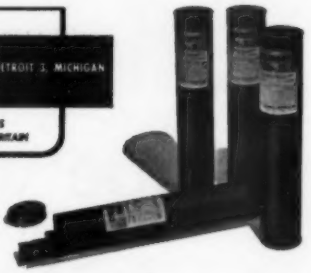
HARD-FACING ALLOYS

WALL COLMONOY CORPORATION

19345 JOHN R. STREET DETROIT 3, MICHIGAN

BIRMINGHAM • BUFFALO • CHICAGO • HOUSTON • LOS ANGELES
LINDEN, N. J. • MORRISVILLE, PA. • PITTSBURGH • MONTREAL • GREAT BRITAIN

Available in 1/8, 5/32, 3/16, and 1/4-inch diameters, packed in 10-lb. sealed metal containers.



LOW COST POWER

For Fast "Secondary Breakage"

FREDERICK *CAST SEMI-STEEL* DROP BALLS

Tough, rugged Frederick Drop Balls give you crushing power where you want it, when you want it . . . cut down expensive drilling or blasting . . . give long, economical service with little or no maintenance. Exclusive "Pear shaped" design withstands greater impact—drops straighter. "E-Z Swing" recessed steel eye gives cable protection plus free swinging action. Use Frederick Cable Weights (135 & 250 lbs.) and Frederick Swivels on all size balls for true, safe cable performance. Nickel alloy standard on all 4000 lbs. or over—or special alloys furnished on request. Balls can be furnished with replaceable pins. Special release hooks for free dropping also available.

Write us today for prices and illustrated literature. Order Balls direct or see your nearest Equipment Dealer.

	Wide Range of Sizes and Weights:						
Pear shape (lbs.)	1500	2000	3300	4000	5200	6500	8000
Ball shape (lbs.)	500	1000	2000	5200			
Spherical shape (lbs.) (for magnet use)	470	950	1650	2400	3000	3700	5400

FREDERICK IRON & STEEL, INC.
FREDERICK *Established 1890* MARYLAND
Phone: MOnument 3-5111

CENTRIFUGAL PUMPS • MUNICIPAL AND GRAY IRON CASTINGS

HETHERINGTON & BERNER

DREDGING PUMPS

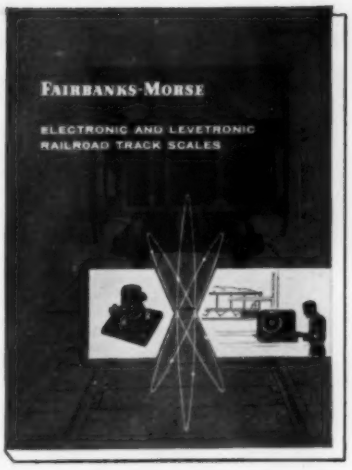
performance-proven on the toughest jobs

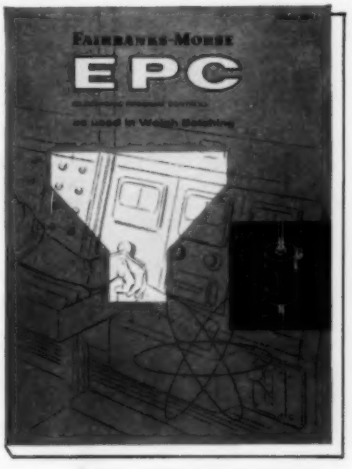
H&B ESTABLISHED 1887

Hetherington & Berner sand and gravel pumps are available in two general types: *STANDARD,* (4", 6" and 8" sizes) with semi-steel parts, for ordinary working conditions and moderate heads; and *DREADNAUGHT,* (6", 8", 10", 12" and 15" sizes) with manganese steel parts, for heavy duty jobs with stringent head conditions.

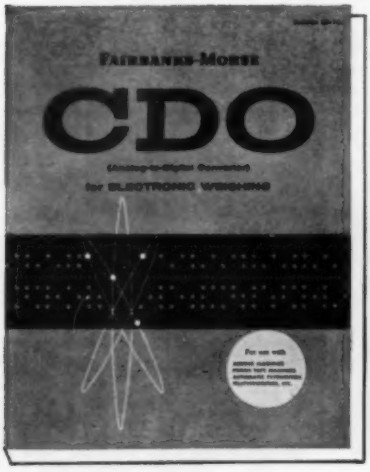
Write for Bulletin DP-147.

HETHERINGTON & BERNER INC.
753 Kentucky Ave. Indianapolis 7, Indiana





The story of Fairbanks-Morse Electronic Scales in seven volumes



Just off the press—seven new bulletins about Fairbanks-Morse electronic weighing and batching machinery. The covers pretty well identify themselves as illustrated above, except that you might not know that EPC is a completely automatic batching system that operates from punch cards . . . or that Batchetron is a slightly less automatic batcher with quick provision for manual preset of the cycle . . . or that CDO is a "read-out" instrument that will translate the weight message of any of the other six into the language "spoken" by automatic typewriters and automatic adding machines and automatic tape punches.

Write today for one or more of the new bulletins on Fairbanks-Morse electronic weighing and batching. Fairbanks, Morse & Co., Scale Division, Dept. PQ-11, 600 South Michigan Avenue, Chicago 5, Illinois.

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

SCALES • PUMPS • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • RAIL CARS • HOME WATER SERVICE EQUIPMENT • MOWERS • MAGNETOS

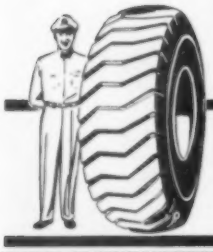
"New Tire" Performance ... 40% Lower Cost!

SOUTHERN TIRE RETREADS

Southern Tire top quality retreads save you up to 40% of the cost of new tires, yet you get new tire performance. You not only save on equipment expense, but also on operating expense, because giant tire pick up and retread delivery by Southern Tire representatives, *at your job site after work hours*, minimizes equipment downtime. Call your tire dealer for all the facts about Southern Tire retread performance — proven by over 55,000 tires!

World's finest giant tire molds . . . Superior 3-sectional molds assure no buffing to breaker strips regardless of growth.

Rock Service, Traction Types or Rib Treads to suit your job — All sizes from 1110 x 24 to 2700 x 33 and new sizes: 29.5 x 25, 29.5 x 29 and 33.5 x 33.



NEW! ADDRESS, PHONE NO.

SOUTHERN TIRE COMPANY

1414 Broadway
SHEFFIELD, ALA.

Phone Collect
Sheffield 4740

CONTRACT CORE DRILLING

EXPLORATION FOR MINERAL DEPOSITS
INCLUDING URANIUM & LIMESTONE — ANYWHERE

FOUNDATION TEST BORING

GROUT HOLE DRILLING

Skilled crews and complete stock of core drills and accessory equipment maintained at all times

Core Drill Contractors for more than 60 years

JOY MANUFACTURING CO.
Contract Core Drill Division
MICHIGAN CITY, INDIANA

Quick starts down to

65° BELOW ZERO

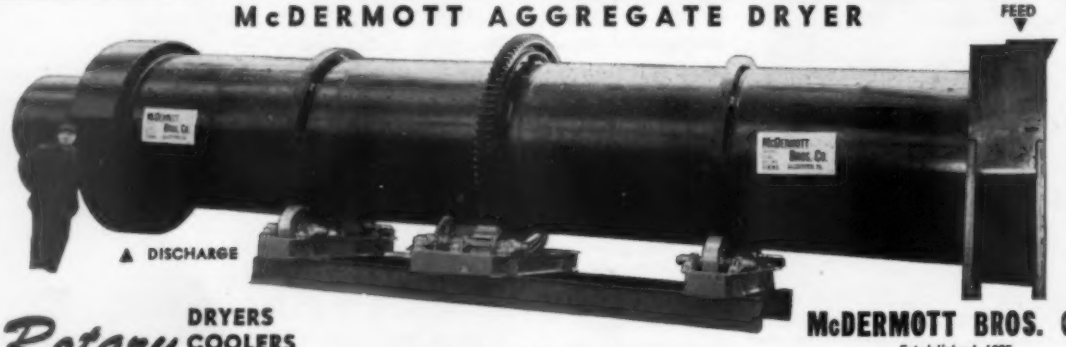
for Diesel and gasoline engines

SPRAY STARTING FLUID, with the propellent used in the pressurized can, insures quick starts for Diesel and gasoline engines in temperatures as low as 65° F. below zero and withstands 180° F. heat. This combustible propellent was developed after two years of research. SPRAY STARTING FLUID pressurized with our inert propellent is absolutely safe and odorless in storage.

SPRAY STARTING FLUID is sold through distributors, wholesalers and their dealers located throughout the United States and Canada.

SPRAY PRODUCTS CORPORATION
P. O. BOX 584 • CAMDEN 1, NEW JERSEY

McDERMOTT AGGREGATE DRYER



Rotary DRYERS COOLERS KILNS

Write for Information

McDERMOTT BROS. CO.
Established 1895
Allentown, Pennsylvania

At these TOUGH WEAR points, specify "THE TOUGHEST STEEL KNOWN"*

Sprockets
Amsco® Manganese Steel sprockets and replaceable rims, hardfaced with Amsco "Economy Hardface C", give 3 to 4 times the life of ordinary sprockets.

Rollers, Idlers
Automatic build-up, then hardfacing with Amsco AW-79 Rod, gives twice the wear of original parts, saves 50% on replacement.

Track Shoes
Manganese Steel construction, with grouser bar integrally cast, and holes counter-sunk so bolts can be re-used. For temporary repair, grouser bar is torch cut and welded to shoe.

End Bits
Corner inserts of Amsco Manganese Steel add extra service life to blade. Amsco HF-40 hardfacing further increases wear resistance.

Scraper Blades
Amsco Manganese Steel gives longer lasting "bite". Amsco HF-40 is ideal for hardfacing.

*AMSCO MANGANESE STEEL . . . plus AMSCO HARDFACING

Shown above are just a few of the "tough wear" points where Amsco products can save you money. Whether for original parts, or for build-up and hardfacing, specify Amsco Manganese Steel and Amsco Hardfacing for maximum operating economy.

We'll be glad to give you full information on Amsco Tractor Parts, Hardfacing Materials or Automatic Welding Machines. Just call your nearby Amsco representative, or write us direct.

OTHER AMSCO PRODUCTS

DIGGING: backhoe buckets—dippers and parts—repointers—dragline bucket parts—dragline chain—sheaves—pinions.

CRUSHING: concaves—mantles—jaw plates—mill liners—hammers.

HANDLING: truck bed liners—grizzly parts—car wheels and liners—sheaves, gears, pinions.

WELDING: automatic and semi-automatic welders—hardfacing rod—manganese plates and shapes.

AMERICAN Brake Shoe COMPANY

AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

OTHER PLANTS IN: DENVER, LOS ANGELES, NEW CASTLE, DEL., OAKLAND, CAL., ST. LOUIS; JOLIETTE, QUEBEC

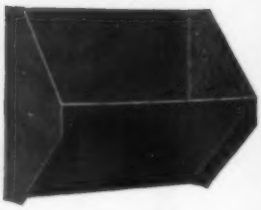
STANDARD

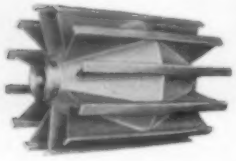
ELEVATING AND CONVEYING EQUIPMENT

·Greater Strength·
·Longer Life·
·Lower Cost·

CONTINUOUS ELEVATOR BUCKET STYLE No. 2

Put this Standard Bucket to work handling the toughest materials, and it takes the job right in stride—resisting abrasion, corrosion and wear. This bucket is typical of the complete line of low cost, rugged Standard Steel Buckets—available in Salem, Style "A," shelf type and other continuous style buckets.





STANDARD WING TYPE SELF-CLEANING PULLEY

The most severe operating conditions won't bother this Standard Pulley because its all-steel welded construction gives it far greater strength and resistance to breaking. And yet it weighs less . . . costs less.

STANDARD BIN GATE

Profit from faster, easier material handling made possible by this gear-operated all-steel Standard Bin Gate. Other styles in Standard Bin Gates also available.

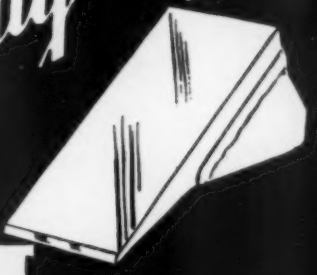
For lower maintenance and material handling costs, convert to Standard. Write today for catalog showing the complete Standard line.

The Standard Metal Mfg. Co. SINCE 1921

STANDARD METAL MFG. CO.
111 CENTER ST. MALINTA, OHIO

H & L

Teeth that really dig!



H & L TOOTH CO.

1540 SO. GREENWOOD AVE.. MONTEBELLO, CALIF.

Still Available!

NEWEST

PORTLAND CEMENT

PLANT MAP

This map shows the locations of all the portland cement plants and distributors now operating in the United States, Canada, Mexico, Alaska, Hawaii, and Cuba, plus those that will be completed in 1956. These plants are listed alphabetically, by state and city, so they can be located easily. Production capacity in barrels, types of process, and brand names of each firm's products are also shown.

The map is 34 by 40 inches and is printed in black and white on heavy, durable 60-lb. paper stock. Prices are as follows:

1-10 maps	**$1.00 each**
11-25 maps	**$ .75 each**
more than 25 maps	**$ .50 each**

Please make your request for these maps on your company letterhead. Also, send along a check, cash or money order to cover the number of maps you wish to purchase.

PIT AND QUARRY PUBLICATIONS

431 S. Dearborn St. • Chicago 5, Ill.

Big American 700 Key To Profitable Operation . . .

PROVES DURABILITY IN ROCK QUARRY!

Here's where real machine durability stands out! A few months in the rock quarry separates claims from facts — proves that American 700 Series Cranes stand up longer — do more work! Big, rugged crawler pads and tough travel mechanism hold up despite the pounding they get when moving through jagged rocks. From top to bottom, the American 700 is built to take the beating that rock work gives! The 700 Series is big—tough, but not muscle-bound! Sensitive air controls operating short arc tandem band clutches spot the dipper exactly—swing it up and out fast, accurately. Easy control that boosts quarry output!

If you're quarrying rock, sand, gravel or other material in smaller quantities, you can get big crane performance and versatility from American 100, 200 or 300 Series Shovels — models that offer dipper capacities from ½-yard up! Talk over your quarry operation with your American Distributor —he'll help you choose the right American Shovel for your needs and he'll show you American features that cut maintenance and operating costs—give you bigger profits day in and day out!

AMERICAN HOIST
and DERRICK COMPANY
St. Paul 1, Minnesota

Hendrick H ... Means High Quality for Quarries

Hendrick . . . Pioneer Perforator of Special Quality Steels for 80 Years

Take Hendrick's 80 years of experience in selecting and specifying the best analyses of steel for the crushed stone industry. Add to it Hendrick's 80 years of experience in perforating plate for vibrating screens and you end up with a combination that can't be beaten.

That's why Hendrick Perforated Plate stands up longer and affords more accurate sizing. No other screening medium can compare to it for uniformity of mesh, for non-blinding clearance and for long, trouble-free service life. Hendrick perforated *H* quality steel is supplied in any desired size or shape of openings.

It can also be furnished flat or corrugated. Write for details.

SEE OUR CATALOG IN SWEET'S

Hendrick
MANUFACTURING COMPANY
39 DUNDAFF STREET, CARBONDALE, PA.
Sales Offices in Principal Cities

PERFORATED METAL • PERFORATED METAL SCREENS • WEDGE-SLOT AND HENDRICK WEDGE WIRE SCREENS • ARCHITECTURAL GRILLES • MITCO OPEN STEEL FLOORING • SHUR-SITE TREADS • ARMORGRIDS • HENDRICK HYDRO-DEHAZER.

BEMIS BRO. BAG CO.

"America's No. 1 Bag Maker"

General Offices—St. Louis 2, Missouri
Sales Offices in Principal Cities

ARMSTRONG-BRAY & CO.

for joining Power or Conveyor Belts anywhere

STEELGRIP Flexible Belt Lacing. 11 sizes for light conveyor and power transmission belts from 1/16"—⅝" thickness, any length. Applied with hammer anywhere.

WIREGRIP Belt Hooks. Applied with any standard lacer or lacing machine. Double aligning card assures perfect job and stop hook waste. 6 sizes.

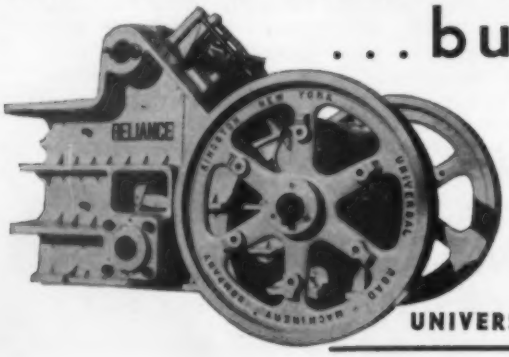
PLATEGRIP Fasteners make smooth water and dust tight joints in conveyor belts of any width, from ¾ to 1½" thick. Permits natural troughing.

HINGEPLATE Fasteners for separate conveyor belts of from ⅜" to ½" thickness, any width. Permit instant changes of belt length.

Write for Catalog

ARMSTRONG-BRAY & CO.
5394 Northwest Highway, Chicago 30, Ill.

The "IRON HORSE" of HEAVY DUTY CRUSHERS ...built by RELIANCE



"It's a horse for work" . . . perfect description of this massive RELIANCE unit, with *built-in* life-time service. Greater weight gives more stability . . . results in minimum operating and upkeep costs. Designed with long jaw plates adjustable for all fineness ranges.

RELIANCE builds crushing, screening and washing plants from 50 to 1500 tons per day capacity.

Write Today for Bulletin

UNIVERSAL ROAD MACHINERY CO., Kingston, N. Y.

RUGGED BUTYL INSULATION plus neoprene jacketing gives this ANACONDA Mine Power Cable long life under rugged conditions: 60-ft. drop over rocky cliff, unprotected from sun or weather in northern open-pit mine.

BUTYL INSULATION MEANS LONGER LIFE

This Cable is as tough as the terrain looks!

Experience shows that in high-voltage mine power cable, the insulation must provide not only good ozone resistance but *mechanical strength* as well.

The unusual tensile strength and inherent ozone resistance of Anaconda's butyl insulation means the strongest, sturdiest mine power cable ever offered you.

In addition, this insulation resists heat, moisture and has high dielectric strength. Over the insulation is a tough, abrasion-resistant neoprene jacket—engineered from years of testing in our own mines.

NEW ENGINEERING BULLETIN EB-27 has full details on performance of Anaconda butyl insulation in 15 Industry Specification tests. Ask the Man from Anaconda for your copy as well as more information about ANACONDA Mine Power Cable. Or write: Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

56331

SEE YOUR ANACONDA®

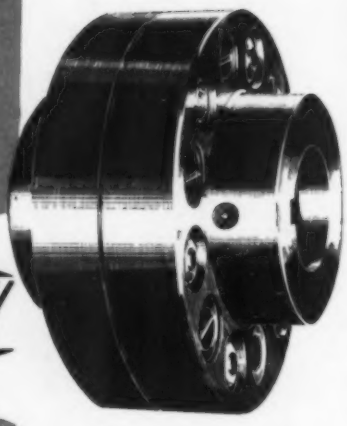
DISTRIBUTOR FOR MINE POWER CABLE

IT PAYS TO SPECIFY

AJAX

flexible couplings

when you order new equipment

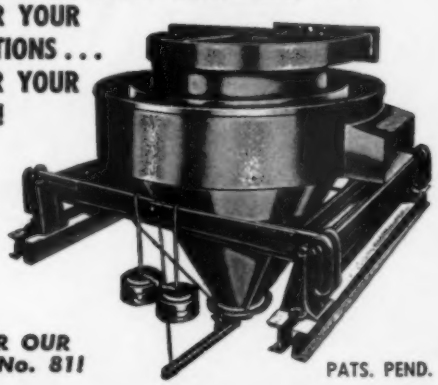


The finest equipment deserves the finest couplings,—safeguard against destructive wear due to unavoidable misalignment. Always specify AJAX FLEXIBLE COUPLINGS when you order. Standard of the industry for over 30 years.

AJAX FLEXIBLE COUPLING CO. Inc.
WESTFIELD, N. Y.

AUTO VORTEX CLASSIFIERS...
MOST EFFICIENT BY ANY MEASURE FOR SINGLE OR MULTIPLE SPLITS!

COMPARE RESULTS . . . COMPARE COSTS . . . AGAINST ANY OTHER SAND GRADATION EQUIPMENT! AFTER SUCH COMPARISON, YOU, TOO, WILL BUY AUTO-VORTEX CLASSIFIERS . . . WHATEVER YOUR SPECIFICATIONS . . . WHATEVER YOUR PROBLEMS!



WRITE FOR OUR BULLETIN No. 811

PATS. PEND.

CHARLES E. WOOD COMPANY
906 NORTH WATER ST. • MILWAUKEE 2, WISCONSIN

Each month, PIT and QUARRY publishes, not one, but *two* classified sections—a big "Broadcast" section in the back-of-the-book and a smaller section in The Concrete Manufacturer. (In this issue, you'll find the Broadcast pages starting on page 300, the "CM" section on page 290.)

A number of our classified advertisers already have tried "hitting 'em with both barrels"—with gratifying (and profitable) results. If you have used equipment to sell—or are looking for something to buy—related to both the quarrying and concrete industries, why don't *you* take advantage of this double opportunity?

Rates are printed at the top of each section, or write today for attractive contract schedules.

PIT AND QUARRY PUBLICATIONS, INC.
431 S. Dearborn St. Chicago 5, Ill.

Satisfied customer Art Martinson (right), president of Denver's Kitimat Corporation, and Phil Smith, Mack salesman. There's real friendship between these two—and no wonder! Mack diesels are giving Kitimat . . .

100% more fuel mileage

The Martinson Construction Company of Denver, Colorado, leases a fleet of trucks from the Kitimat Corporation. Originally, the trucks were gasoline-powered units averaging 3½ to 4 miles per gallon—real "profit killers." Today, Kitimat operates Mack diesels exclusively and averages 8 miles per gallon—for a saving in fuel costs of more than 100%.

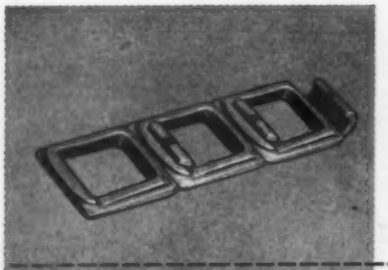
As Kitimat president Art Martinson says, "In 1952 we bought our first Mack diesel and got a real lesson in truck economy and performance. Today, we are 100% Mack—12 mixers, 6 dumpers, and 2 tractors. The fuel savings alone more than justify the higher initial cost of the Macks. Just as important, our Macks give us dependable service, bonus capacities, and lower maintenance costs with a really gratifying minimum of down time."

Why not cut hauling costs and boost your profits with Macks—trucks that are unmatched for operating economy, stamina, and low maintenance? Like other operators, you'll find that you can't afford *not* to operate Macks. For complete information, contact your local Mack Branch or Distributor. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

• • •

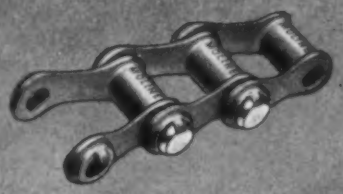
MACK
first name for
TRUCKS

FOR ALL TYPES OF CONVEYING ELEVATING AND HANDLING



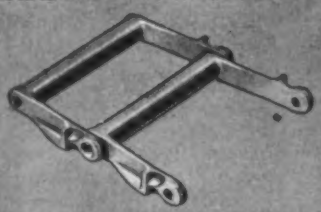
DETACHABLE CHAINS

for drives and elevators and conveyors, combine the advantages of easy assembly, utility and low cost.



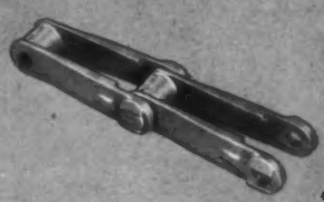
PINTLE CHAINS

for drives and heavy duty conveyors and elevators, are light in weight and moderately priced.



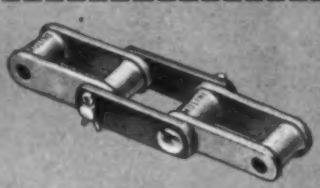
REFUSE CHAINS

for conveying wood refuse, ashes and other waste materials, are designed to push materials through troughs.



LONG PITCH PINTLE CHAINS

for conveyor and elevator service, provide great strength with minimum weight at low cost.



COMBINATION CHAINS

for extra heavy duty service, are used in conveying and elevating highly abrasive materials.

Moline Chains for conveyors, elevators and drives are the finest that modern manufacturing methods can devise. They have set the standards for many industrial purposes.

Moline Chains are available in both Moline Malleable or Moline Promal Iron.

Distributors and dealers everywhere. Write for information.

Moline CONVEYOR Chains

MOLINE MALLEABLE IRON CO.
ST. CHARLES, ILLINOIS

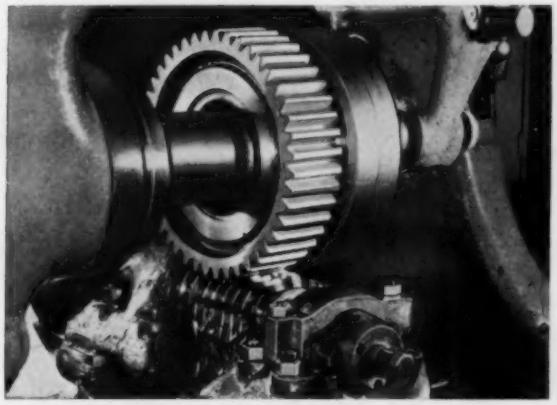
LEADERS FOR 60 YEARS

Licensed Manufacturers of Promal Chains

Your Allis-Chalmers equipment deserves *True Original Parts*

Why? Because they meet design, manufacturing, inspection and packaging standards that assure long life . . . budget-stretching low-cost operation.

DESIGNED WITH THE ORIGINAL EQUIPMENT. Each Allis-Chalmers True Original Part benefits from a fine metallurgical research program. Each is designed by experienced engineers to do its full share of the work . . . just as each component in your Allis-Chalmers machines did when this equipment was new.



PRODUCED ON MODERN MACHINES BY SKILLED CRAFTSMEN. Here's where modern manufacturing equipment and know-how combine to produce precision parts. This combination is the reason you can be sure of getting full work power from any Allis-Chalmers equipment in which True Original Parts are used.

CAREFULLY INSPECTED FOR PRECISION FIT. Every Allis-Chalmers part goes through rigid original-equipment inspection processes and testing routines. Gears are checked many times — for perfect meshing, true balance, full capacity.

PROPERLY PACKAGED FOR LASTING PROTECTION. Many are specially treated to protect against rust and dust. Others are safety-packed to guard against nicks, scratches or handling damage.

True Original Parts are available at your Allis-Chalmers Construction Machinery dealer — where factory-trained servicemen are on hand to help you at all times.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

TORRINGTON *SPHERICAL ROLLER* BEARINGS

This bearing can take thrust, too!

Design is the secret. TORRINGTON Spherical Roller Bearings are made with an integral center flange on the inner race. This assures *positive radial stability and accurate positioning of rollers* wherever high radial load and heavy thrust are encountered under conditions of misalignment.

From crushers to cranes, power shovels to pulverizers, you get long, maintenance-free operation, better performance in your equipment, more value from your bearing dollar when you specify these rugged dependable bearings.

Prove to yourself that TORRINGTON design does make a difference. Next time specify TORRINGTON Spherical Roller Bearings. They're available with either straight or tapered bore, for shaft or adapter mounting.

THE TORRINGTON COMPANY

South Bend 21, Ind. • Torrington, Conn.

District offices and distributors in principal cities of United States and Canada

90th ANNIVERSARY 1865–1955

TORRINGTON BEARINGS

Spherical Roller • Tapered Roller • Cylindrical Roller Needle • Ball • Needle Rollers

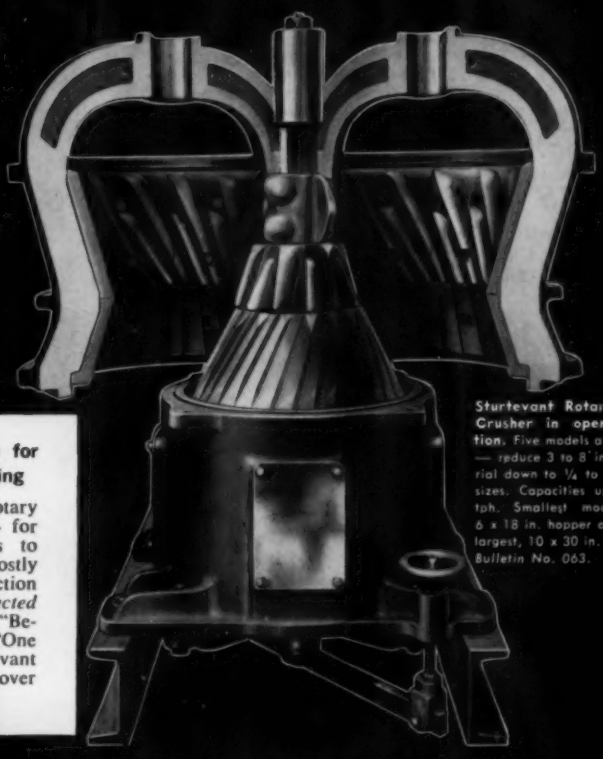
PRODUCTION ALWAYS ON SCHEDULE

Thanks to

"OPEN-DOOR" DESIGN

"One Man, One Minute" Accessibility for Inspection, Clean-outs, Trouble-shooting

One man can swing open a Sturtevant Rotary Fine Crusher in a matter of minutes — for inspection and maintenance — thanks to Sturtevant's unique "Open-Door" design. Costly downtime is cut to a minimum, production kept on schedule — *even when the unexpected happens.* Little wonder that users say: "Because of their rugged construction and "One Man, One Minute" accessibility, Sturtevant machines give us *lower* operating costs over *more* years."



Sturtevant Rotary Fine Crusher in open position. Five models available — reduce 3 to 8 in. material down to ¼ to 1¼ in. sizes. Capacities up to 30 tph. Smallest model has 6 x 18 in. hopper opening; largest, 10 x 30 in. *Request Bulletin No. 063.*

STURTEVANT ROTARY FINE CRUSHERS REDUCE SOFT TO SEMI-HARD MATERIALS FASTER, MORE ECONOMICALLY

For uniform crushing of soft (clay, charcoal) to moderately hard materials (softer limestone, cement clinkers), the Sturtevant Rotary Fine Crusher is practically non-clogging — much faster than other machines, less costly to operate.

Smooth production flow. The single turning of a hand wheel regulates the output size (from ¼ to 1¼ in. on largest model) — provides a uniform product, dustless operation, steady output for greatest production efficiency.

A lifetime of low-downtime service. Built into Sturtevant Rotary Fine Crushers is Sturtevant's 83 years of successful engineering of dry processing units and equipment. Rugged construction, plus easy accessibility provided by Sturtevant's unique "Open-Door" design, assures more output per machine year.

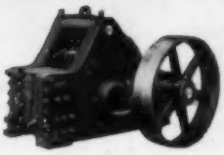
Write today, Address: Sturtevant Mill Company, 104 Clayton St., Boston 22, Mass.

STURTEVANT

Dry Processing Equipment

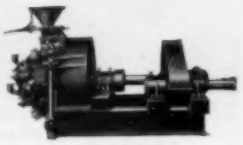
The "OPEN-DOOR" to *lower* operating costs over *more* years

CRUSHERS • GRINDERS • MICRON-GRINDERS • SEPARATORS
BLENDERS • GRANULATORS • CONVEYORS • ELEVATORS



JAW CRUSHERS

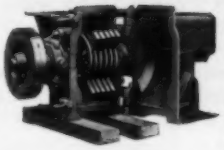
Reduce coarse (5 in. largest model) to fine (⅛ in. smallest model). Eight models range from 2 x 6 in. jaw opening (lab model) to 12 x 26 in. Capacities to 30 tph. All except two smaller sizes operate on double cam principle—crush twice per energy unit. *Request Bulletin No. 062.*



RING ROLL MILLS

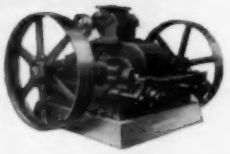
Reduce hard or soft 1½ in. and smaller material to from 6 to 200 mesh. Grind only — no screens. Capacities of 3 models range up to 18 tph, depending on model and material. Ring diameters and faces 24 x 7 in.; 45 x 8 in.; 44 x 14 in. *Request Bulletin No. 079.*

ALL STURTEVANT MACHINES ARE DESIGNED TO OPERATE ADVANTAGEOUSLY IN "UNITS"



HAMMER MILLS

Reduce to 20 mesh. Swing-Sledge Mills crush moderately hard material up to 70 tph. Hinged-Hammer Pulverizers crush softer material at rates up to 30 tph. Four Swing-Sledge Mills with feed openings from 6 x 5 in. to 20 x 30½ in. Four Hinged-Hammer Pulverizers from 12 x 12 in. to 12½ x 24 in. *Request Bulletin No. 084.*



CRUSHING ROLLS

Reduce soft to hard 2 in. and smaller materials to from 12 to 20 mesh with minimum fines. Eight sizes, with rolls from 8 x 5 in. to 38 x 20 in.; rates to 87 tph. Three types — Balanced Rolls for automatic adjustment in operation; Plain Balanced Rolls; Laboratory Rolls. Recomended for 3 to 1 reduction. *Request Bulletin No. 065.*

New Automatic Precipitator Control by

WESTERN PRECIPITATION

offers many vital advantages...

1 LONG LIFE

This new control has indefinite life expectancy under all types of operating conditions. There are no tubes to replace, no high speed relays, counters, or timers to maintain. All circuitry consists of rugged "static" devices that have unusually long life!

2 RELIABILITY

Optimum Precipitator power input is maintained regardless of operating conditions. The sensing control is simple, positive, accurate—and automatically evaluates the spark "Power Value" (intensity and frequency)—not just frequency or intensity alone.

3 STABILITY

Under short circuit, open circuit or other varying conditions, this control is completely stable and inherently trouble-free!

4 MODEST COST

Modest initial cost coupled with negligible maintenance assure optimum operating efficiency (therefore lower operating costs) throughout many years of continuous service.

WHEN using a Cottrell Precipitator for collecting dust, fume, fly ash or other suspensions from industrial gases, it is essential at all times to impress on the high voltage system the highest possible voltage and current without "flashover". Depending upon gas conditions, dust loading and other variable factors, the optimum voltage and current requirements vary widely from one minute to the next. Therefore, the vital importance of a simple, trouble-free and highly sensitive Precipitator Control is self-evident.

This new Western Precipitation Automatic Precipitator Control—*a product of the organization that has consistently led in the application of Cottrell Precipitators for industrial gas cleaning* — combines vital advantages found in no other competitive equipment. Our nearest representative will be glad to supply complete details. Or write direct!

Why not modernize your present out-dated Precipitator installation? The Western Precipitation Automatic Precipitator Control can be installed on any Cottrell unit. For further information contact our nearest office!

Western Precipitation Corporation

Designers and Manufacturers of Equipment for Collection of Suspended Material from Gases ..and Equipment for the Process Industries

Main Offices: **1015 WEST NINTH STREET, LOS ANGELES 15, CALIFORNIA**

Chrysler Building, New York 17 • 1 North La Salle Street Building, Chicago 2 • Oliver Building, Pittsburgh 22 • 3252 Peachtree Road N. E., Atlanta 5 • Hobart Building, San Francisco 4

Precipitation Company of Canada Ltd., Dominion Square Building, Montreal

Representatives in all principal cities

COTTRELL Electrical Precipitators
MULTICLONE Mechanical Collectors
CMP Combination Units
DUALAIRE Reverse-Jet Filters
HOLO-FLITE Processors

This dry sand abrasion test is one of many American Brake Shoe research evaluations which help you make the most of ABK Metal's characteristics in your specific applications.

ABK® METAL

research helps your fight against abrasion

In severe abrasive service—such as mill liners—three to four times the usual life can be expected with ABK Metal! Its extreme hardness (500 to 700 Brinell) and very high resistance to abrasion make it "good as new" when ordinary materials are worn out.

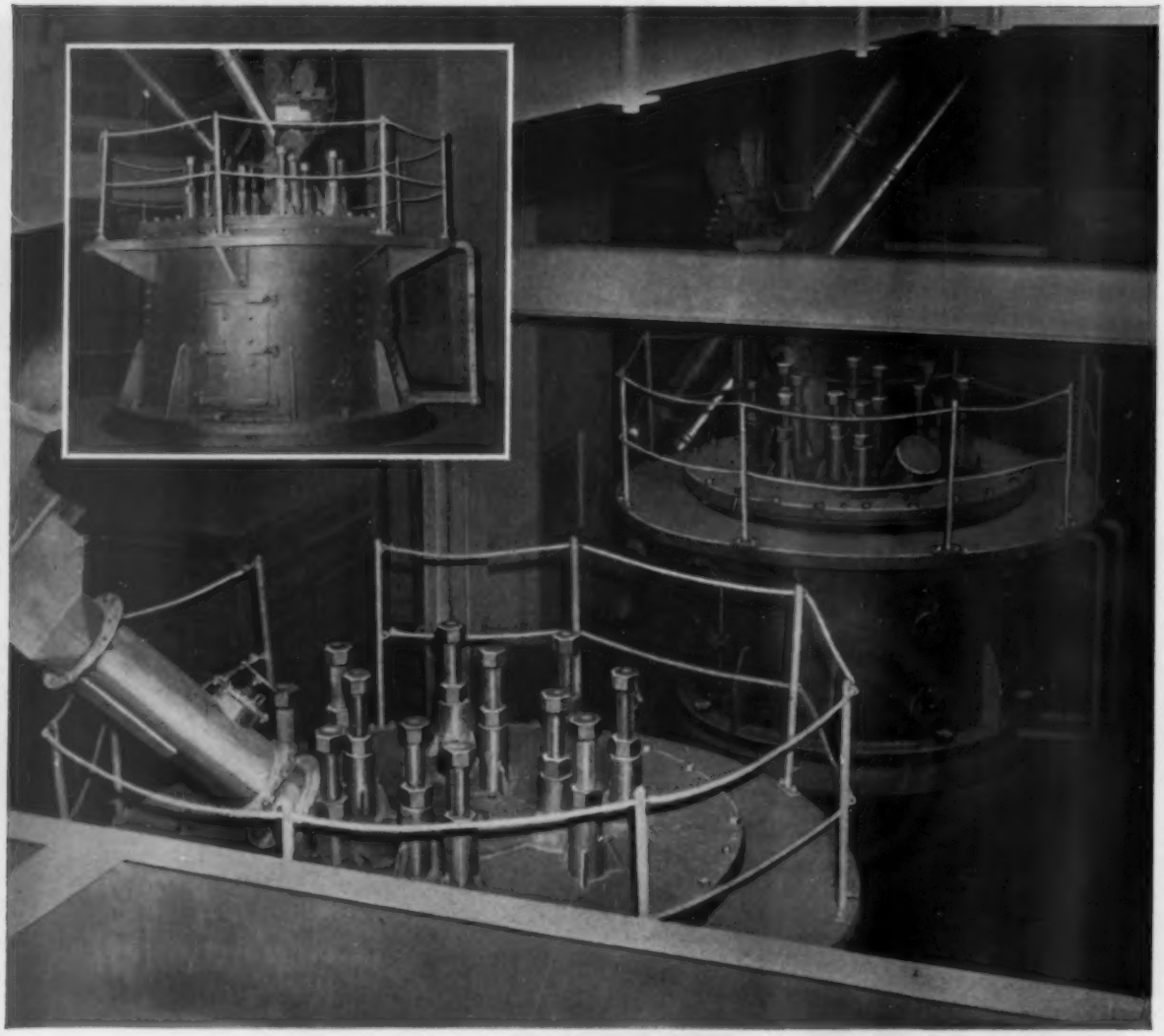
Because it lasts so much longer, ABK Metal costs far less per ton of material processed. ABK Metal liners reduce down-time and prevent costly losses of production. ABK Metal also slashes the labor expense of frequent liner replacement.

ABK Metal—a controlled structure nickel-chrome iron—is produced *only* by American Brake Shoe.

A-1826

AMERICAN Brake Shoe COMPANY

BRAKE SHOE & CASTINGS DIVISION
230 PARK AVENUE · NEW YORK 17, N. Y.
CHICAGO · SAN FRANCISCO



CLOSED-CIRCUIT GRINDING AT LOW COST

with B&W Type B Pulverizers

At Alpha Portland Cement Company's plant in Cementon, N.Y., two B&W Type B Pulverizers grind raw materials in a B&W Closed-Circuit System. One pulverizer has been in service for about 20 years and the other more than one year. Total capacity is 90 to 100 tons per hour and grindability is about 55 Hardgrove.

Alpha and other users have discovered that long life is built into the grinding elements of B&W Pulverizers. This means efficient, low-cost grinding.

Many long service records prove that B&W Type B Pulverizers require less power, low maintenance and minimum space . . . offer, high fineness, easy access and long life.

For raw grinding economy call on B&W. Write, The Babcock & Wilcox Company, Boiler Division, Process Equipment Department, 161 East 42nd Street, New York 17, N. Y.

BABCOCK & WILCOX

BOILER DIVISION

C-218

GAS CLEANING NEWS

Top Cement Producer Orders Four More Koppers Electrostatic Precipitators for Gas Cleaning

Leading Company has ordered 8 Koppers Electrostatic Precipitators since 1950

KOPPERS Electrostatic Precipitators have provided such excellent service that this leading cement producer ordered seven additional Koppers units during the last six years.

Proves Performance on the Job

The company ordered its first Koppers Electrostatic Precipitator in 1950. Its operation was so successful that Koppers Units now collect dust in both East Coast and Gulf Coast plants. These Koppers units have proved economical and efficient because Koppers engineers were able to meet the exacting requirements of each application.

Supplies a Wide Range

These Koppers Electrostatic Precipitators range in capacity from 75,000 CFM to 132,000 CFM. And each Koppers unit has exceeded its guaranteed performance. Engineering know-how enables Koppers to economically satisfy each individual application.

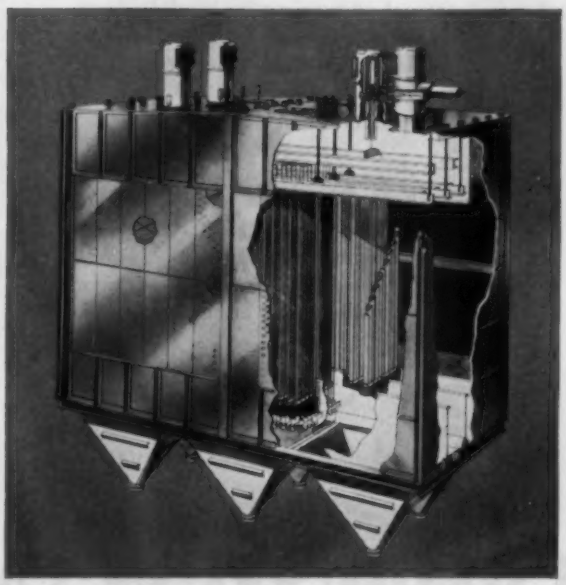
Meets Individual Plant Needs

Koppers custom-designs Electrostatic Precipitators for cement and other dry dust applications: cleaning rotary or vertical kilns, calcining kettle stack gas, collecting dust for re-use, cleaning gases from finishing and raw mill operations. Koppers tailors a power unit by one of three methods to fit specific needs and can also integrate an automatic power regulator into the overall design.

Backed by Know-How

Koppers has over 75 years' experience in industrial gas cleaning. In addition, Koppers maintains extensive research facilities at Verona, Pa., and Baltimore, Md. Manufacturing facilities at Baltimore produce gas cleaning equipment for every size and type of plant.

You can put all of this experience and equipment to work solving your gas cleaning problems. Just write KOPPERS COMPANY, INC., Metal Products Division, Industrial Gas Cleaning Dept., 4511 Scott Street, Baltimore 3, Maryland.



Cutaway photo of a Koppers Electrostatic Precipitator shows shell, vibrators, and collecting and discharge electrodes. The actual design and arrangement of elements vary widely because Koppers Electrostatic Precipitators are custom-designed to fit requirements of each particular installation.

RAYMOND SERVICE goes with RAYMOND EQUIPMENT

If you are building a new cement plant or modernizing the old one, Raymond experience can help you in developing maximum production efficiency.

Raymond engineers will work with you in selecting the proper type and size of a Whizzer Air Separator to meet your capacity requirements, and to insure long term economy in cement classification.

Whizzer Separation

The Raymond Mechanical Air Separator with the patented revolving Whizzer provides an important link in the cement production line. With its easy fineness control and close separation of fractions, it does a precision job in the classification of raw mix or cement clinker.

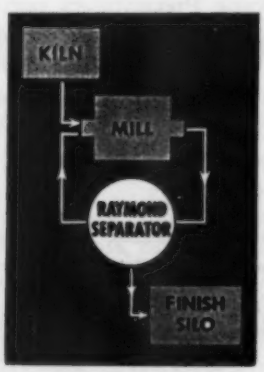
With the proper setting of the separator, the external adjustment of the slide dampers controls the fineness of specific surface area. Standard Portland grades up to high early strength cement can be produced without internal changes.

The resulting increased output, ranging from 25% up, and the improved plant efficiency due to closed circuit operation, make the Raymond Separator a "natural" for raising cement production and reducing the per-barrel cost of any grade you produce.

SINCE 1887

For further details, see new Raymond Bulletin #76.

RAYMOND MECHANICAL AIR SEPARATOR



In closed circuit grinding operations Raymond Separators maintain uniformity of product, boost overall mill output, and add to the efficiency of the complete unit of equipment.

COMBUSTION ENGINEERING, INC.

Raymond Division

1321 NORTH BRANCH ST.
CHICAGO 22, ILLINOIS

SALES OFFICES IN PRINCIPAL CITIES

Combustion Engineering-Superheater Ltd., Montreal, Canada

Here's How

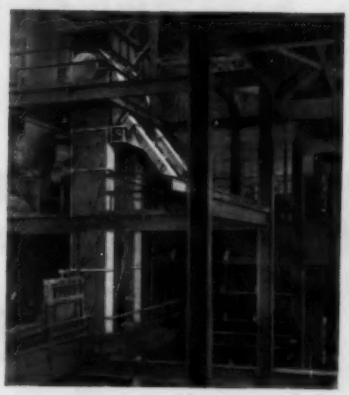
you can lower the cost of elevating

LINK-BELT will recommend the right bucket elevator from 13 types in 4 basic designs

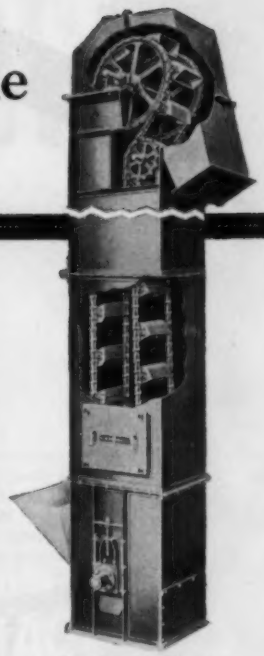
YES, not only does Link-Belt make bucket elevators for all types of material—there is specialization right down to spacing of buckets . . . the types of take-ups and hoods for utmost effectiveness. In addition, Link-Belt offers a wide range of buckets and chains for further assurance of maximum efficiency in handling your materials.

Installation, maintenance and operating costs are low with Link-Belt Bucket Elevators. Rigid, jig-built casings are self-supporting, requiring only occasional lateral tie-ins depending on height. You have quick access to both head and boot for periodic inspections. Simple screw or gravity take-ups maintain chain or belt tension always.

To be sure of a bucket elevator system tailored correctly for your needs, include Link-Belt in the designing of your next installation. Get in touch with a materials handling expert through your nearest Link-Belt office.

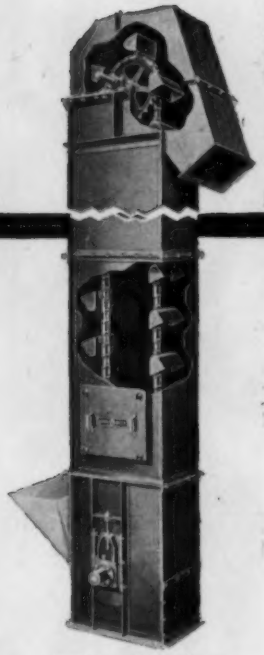


TWO LINK-BELT continuous discharge bucket elevators carry white- and dark-run gypsum for processing. Both are steel-encased.



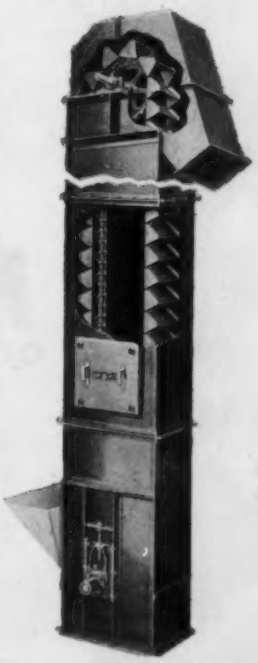
Positive Discharge

FOR LIGHT, FLUFFY, FRAGILE materials and those tending to stick to buckets.



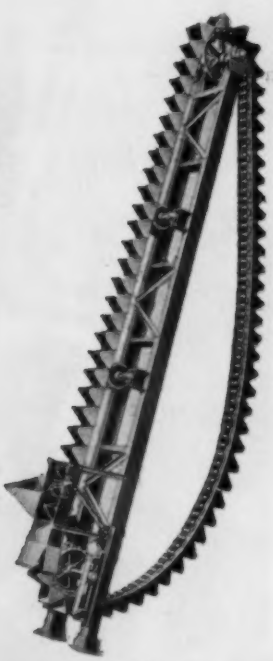
Centrifugal Discharge

FREE-FLOWING, FINE AND LOOSE materials with small to medium size lumps.



Continuous Discharge

VARIOUS BULK MATERIALS, ranging from light to heavy with small to large lumps.



Inclined Elevators

HIGHLY ABRASIVE MATERIALS, like sand, gravel, stone and similar materials.

LINK-BELT

BUCKET ELEVATORS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World. 14.194

For Over 20 Years the World's

Fine, even-grained structure extends deep into the core of Moly-Cop Ball to give long, even wear.

STANDARD of COMPARISON

SHEFFIELD

ARMCO®

MOLY-COP

TRADE MARK

COPPER-MOLYBDENUM-ALLOY

Grinding Balls

SHEFFIELD STEEL

DIVISION

ARMCO STEEL CORPORATION

SHEFFIELD PLANTS: HOUSTON • KANSAS CITY • TULSA

EXPORT REPRESENTATIVES

THE ARMCO INTERNATIONAL CORPORATION, Middletown, Ohio

For producers of Concrete Building Units, Pipe and Ready-Mixed Concrete

NOVEMBER 1956

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT AND QUARRY

Two Industries — Prestressing and Ready-Mix — Join Forces (See Page 269)

Drive-in Motor Lobby for

'Incor' Speeds Completion of 650-Car Garage

Dallas Adolphus Hotel

● Adolphus Hotel of Dallas is among the first to provide automobile drive-in facilities for guest registration. Hotel elevators lead directly to the Motor Lobby in the new 650-car garage, which covers 200 by 100 ft., with full basement, six floors and roof parking.

Good job planning and dependable 'Incor' high early strength made it possible to complete this durable, fire-safe structure seven months and two days after breaking ground, including time out for bad weather.

'Incor' was used in the frame as well as in basement walls, for 24-hour form removal. Result, top construction speed with fewer form sets. Same thing holds true for beam soffets and sides. Exterior street walls are concrete and glass, with lintel beams forming solid portion of walls.

Also used in 105,000 sq. ft. of precast, light-weight channels, 'Incor' made possible assembly-line production speed, with minimum forms and only a small stockpile of units in casting yard.

Big thing about 'Incor'* is profitable job speed. And along with dependable high early strength goes assured high ultimate strength as well—dual reason for insisting on America's FIRST high early strength Portland cement for lowest annual cost.

*Reg. U.S. Pat. Off.

(Left) View showing precast channels in place for first floor (Right) photo shows manner in which floors were completed—excellent job organization and 'Incor' speeded construction of well-designed, fire-safe, durable structure.

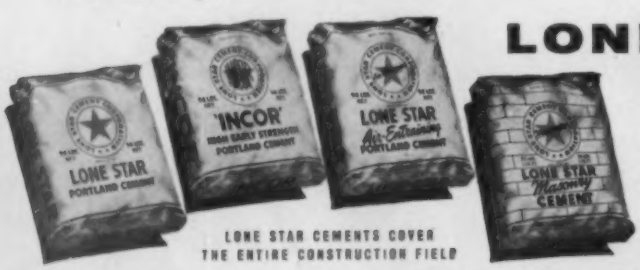
ADOLPHUS HOTEL GARAGE

Architect & Engineer: **J. N. MAC CAMMON**

Contractor: **COWDIN BROS.**

'Incor' and Lone Star Ready-mix Concrete:
DALLAS CONCRETE COMPANY

Precast floor and roof channels:
TEXCRETE STRUCTURAL PRODUCTS CO.
—all of Dallas, Texas

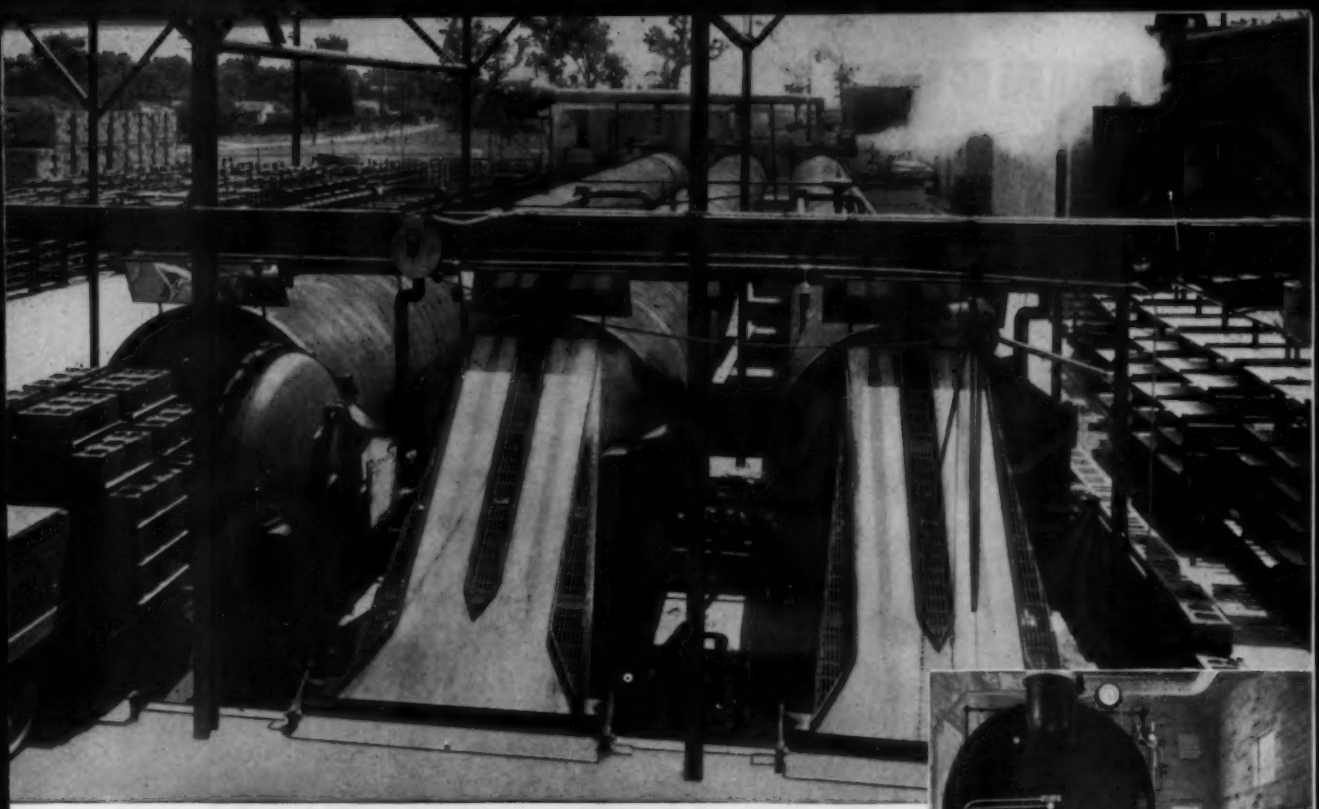


LONE STAR CEMENTS COVER
THE ENTIRE CONSTRUCTION FIELD

LONE STAR CEMENT CORPORATION

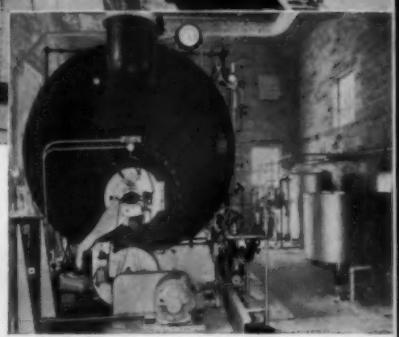
Offices: ABILENE, TEX. • ALBANY, N.Y. • BETHLEHEM, PA.
BIRMINGHAM • BOSTON • CHICAGO • DALLAS • HOUSTON
INDIANAPOLIS • KANSAS CITY, MO. • NEW ORLEANS • NEW YORK
NORFOLK • RICHMOND • WASHINGTON, D.C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 18 MODERN MILLS, 38,000,000 BARRELS ANNUAL CAPACITY



More than 18 months of research and development by Southern Block and Pipe Corp., preceded the development of the modern process.

New "high-pressure" block plant sets new record with Cleaver-Brooks 600-hp boiler



New 600-hp boiler "speaks with authority," providing entire steam supply for this progressive firm. Starting service and operator instruction are furnished without extra charge — an important *extra* bonus for specifying Cleaver-Brooks boilers.

Automatically steam-cures 20,000 blocks and 150 tons of pipe and shapes per day

SOUTHERN Block and Pipe Corp., Norfolk, is to be congratulated on its impressive, record-setting achievement. This newest and most modern block plant in Virginia is a perfect pin-point example of the very latest in applied concrete products technology . . . *and why it pays to buy steam power with a punch!*

Consider what it takes to do all this:

- Steam-cure *five* high-pressure autoclaves of 8 x 8 x 16 in. block per 16 hours — or a total of 12,000 blocks.
- Steam-cure from *four to six* low-pressure (50 psi) kilns of block — each kiln containing 1400 blocks.
- Furnish steam for *six* additional kilns to cure 150 tons of concrete pipes and shapes.

Southern Block's new Cleaver-Brooks 600-hp boiler burns No. 6 fuel oil at an average rate of 1250 to 1500 gals. per 16-hr. day. Boiler operates continuously for 16 hours — at 140 psi at a maximum stack temperature of 400°F.

An outstanding maintenance job is being done by the steam engineer in charge. Daily checks are made on feedwater, oil consumption, water evaporation, and condition of all equipment in the cycle. Records prove that due to efficient operation and care, this plant is maintaining an average fuel-to-steam efficiency of *80% or better.* One more convincing demonstration of the day-in, day-out reliability and economy of Cleaver-Brooks' modern four-pass, forced draft boiler design.

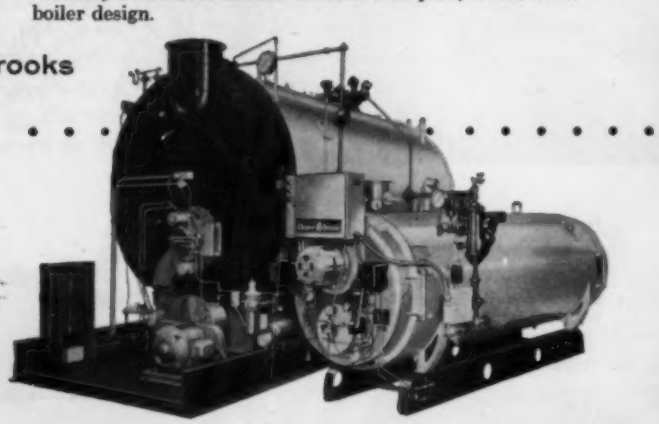
Steam needs... large or small... Cleaver-Brooks has the answer to them all

Cleaver-Brooks offers you a choice of 18 sizes, 110 models for oil/gas or combination oil/gas firing — in the range of 15 to 600 hp. Competent sales agents in principal cities assist you without obligation. For complete data, write:

CLEAVER-BROOKS COMPANY
Dept. M, 347 E. Keefe Ave., Milwaukee 12, Wisconsin, U.S.A.
Cable address: CLEBRO — Milwaukee — all codes.

Cleaver Brooks (25th YEAR)

TWENTY-FIVE YEARS OF LEADERSHIP BY THE ORIGINATORS OF THE SELF-CONTAINED BOILER



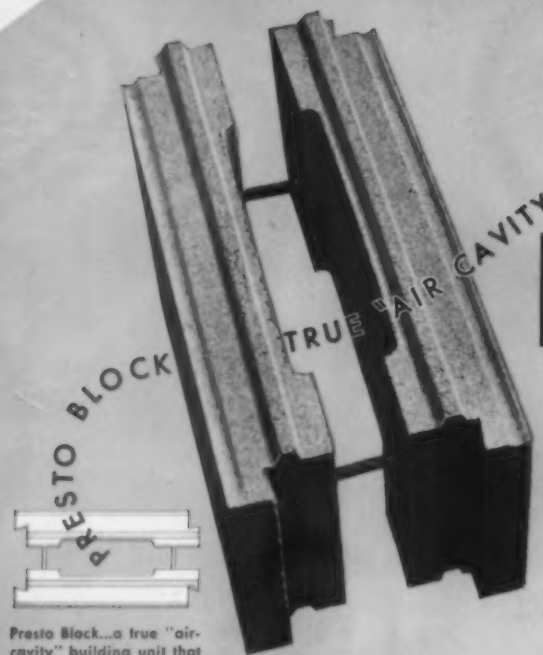
THE INDUSTRY WANTED
A TRUE "AIR CAVITY" BLOCK

And Here it is!

"TRUE AIR CAVITY" CONSTRUCTION WITH COMPLETE TWIN WALL INSULATION

PRESTO BLOCK

Automatically Produced



Presto Block...a true "air-cavity" building unit that combines the economy and erection speed of dry-wall construction with complete twin wall insulation.

on the world's most advanced hydraulically-operated, electronically-controlled block machines at 4 to 6 cycles per minute (depending upon the type of aggregate used). Each Presto Block is held together and reinforced by two corrugated steel ties, which feed automatically during the production cycle. Presto Blocks are produced at the same speeds—the same cost—and with the same aggregates as conventional concrete blocks.

Here, ease of Presto Block twin wall construction is demonstrated. Blocks are self-aligning, with end, top, bottom surfaces keyed to lock upon erection.

True "Air Cavity"

INSULATION. Revolutionary Presto Block—a miniature twin wall in itself—is the only *single-unit* block to build a *true air-cavity wall*...with *no masonry bond*...providing the finest SOUND, CLIMATIC AND MOISTURE INSULATION AVAILABLE TODAY!

FOR THE COMPLETE PRESTO BLOCK STORY and information in regard to franchise arrangements, write, wire or phone . . .

PRESTO BRICK MACHINE CORPORATION
Empire State Building, New York, N. Y.
Phone Pennsylvania 6-1353-4-5-6-7

MEMBER NCMA

© 1956 PRESTO BRICK MACHINE CORP., N. Y.

A DYNAMIC NEW BUILDING MEDIUM

The CONCRETE MANUFACTURER

November 1956

A Case of Poor Judgment

RECENTLY, the frame of a reinforced concrete building being erected in a Midwestern city collapsed, the accident killing several of the workmen and injuring many more. The contracting firm doing the work was one of the best in this country in point of experience. The cause of the failure has not yet been established by the committee of officials investigating the disaster. Neither of these considerations, however, is pertinent to the point we wish to make.

On a field trip in the East at the time of the accident, we had visited many types of concrete plants and talked with several men who had recently built new prestressing beds. The head of one of these firms, about to start prestressing operations, was looking about for an attention-getting headline for his first newspaper advertisement of the new venture. He proposed to reproduce the headline of the construction mishap and to add, "This couldn't happen with prestressed concrete!" We are glad to report that we succeeded in pointing out what a poor choice of message this would be.

With this single exception, all the others had evidently possessed the foresight to investigate carefully their new field of endeavor, and should succeed in their future operations. None of them had presumed to profit by the misfortune of another, and none had shown the mistaken judgment of the above individual as to what constitutes their real competition.

While time-honored reinforced concrete is competitive with prestressed concrete in many structural applications, each method of design has its most advantageous fields of use, a fact which must be considered by the designer in each particular instance. Both are subject to failures if proper precautions are not taken in handling the constituent materials, or the finished products in their final installation. With prestressed concrete entering only its fifth year of extensive use, every operator must avail himself of all the relatively limited information on prestressed concrete, if he is to conduct his business profitably.

It is hoped that this story may help dissuade other operators who might be tempted at one time or another in the future to indulge in the type of mud-slinging described above. While such tactics may be employed with impunity on a national scale in the political arena, we are still old-fashioned enough to feel that when a prestresser knocks reinforced concrete for his own gain, he is impugning the very history of his own material, regardless of how it may be formed or stressed in the final analysis.

Ray L. Peck

Besser 8-Star Promotion of CONCRETE BLOCK

- Concrete Masonry Advertisements in Architectural and Building Publications.
- 28 Page Concrete Masonry Insert in Sweet's Architectural File.
- Permanent Exhibit in National Housing Center, Washington, D. C.
- Permanent Exhibit in Architects' Samples Corporation Building, New York City.
- Exhibit Display Units for Home Shows, Conventions, etc., loaned to block plants.
- Plan Books illustrating 225 Block Masonry Homes.
- Series of 26 Newspaper Ads to help Sell Concrete Masonry to the big Home Market.
- Cooperative Advertising Material, including Home Builders' Booklet . . . Jumbo post cards in full color . . . Blotters . . . Match Books . . . Bulletins . . . Radio scripts . . . Movie films . . . etc.

Creates Interest in Concrete Masonry... Stimulates Demand for All Types of Block ...Helps Plants to Sell More Units

You not only want to *produce* block... you want to *sell* block. The Besser Company helps you to do BOTH!

Through the medium of architectural and building publications, radio, newspapers, exhibits and a great variety of promotional material, the Besser Company is carrying the torch for the Block Industry. We are sincerely striving to get Mr. Public sold on the merits of Concrete Masonry.

Besser provides the world's leading machine for making block, plus the necessary "tools" for selling the block. This twofold program results in a solid foundation for progress for all VIBRAPAC Block Plants.

A portion of the Besser Company's permanent exhibit at the National Housing Center, Washington, D. C. Shows many new and interesting concrete masonry wall patterns.

Besser Exhibit at the Architects' Samples Corporation, New York City. Presented to the Architectural Profession by the Besser Company to suggest design in concrete masonry.

A 8927-1P

BESSER COMPANY

World's Leading Manufacturer of Concrete Block Machinery

ALPENA, MICHIGAN, U. S. A.

News of the Concrete Industries

Rocklite Blocks Fire-Tested With All Cores Filled—Meet 4-Hour Requirements

At the Engineering Materials Laboratory of the University of California, Berkeley, Calif., a fire test was conducted recently by Professor Raymond E. Davis on standard 8- by 8- by 16-in. concrete units made with Rocklite lightweight aggregates. The wall test panel, constructed to conform to the minimum requirements of the Los Angeles Building Code for concrete block construction, had vertical reinforcing steel rods at 24-in. centers. The two intermediate cores between the studs were filled with 9/16-in. Rocklite coated shale aggregate, which served as insulation.

The purpose of the test was to measure heat transmission through the 8-in. wall by constant observation of the temperature difference between the inside flame-exposed surface and the outside unexposed surface of the wall. The maximum permissible average temperature rise of the unexposed surface at the end in the period of 4 hours is 250 deg. F. In the test wall the average temperature was only 166 deg. F. The maximum rise at any one point in the test was only 191 deg. F., well under the maximum permissible temperature of 325 deg. F.

The four-hour fire test was immediately followed by the standard hose stream test, using water pressure at 45 p.s.i. The test wall resisted this thermal shock and the force of the water stream satisfactorily by all standards. The effectiveness of the core filling of Rocklite lightweight aggregate lending considerable thermal insulation value to the wall must be taken into consideration in any evaluation of the fire test.

More on Prilling Towers—Especially Concrete Stave

On page 191 of the October issue of THE CONCRETE MANUFACTURER we published a news story describing a concrete stave tower recently completed by Marietta Concrete Corporation, Marietta, Ohio, for the Sohio Petroleum Company in Lima, Ohio. The tower is to be used in the manufacture of urea pellets for farm fertilizer. Since the publication of this article the Marietta Concrete Company has sent us the following additional information.

The basis for the design and operating know-how for the prilling tower comes from Friedrich Uhde, G.m.b.H. (Dortmund, Germany), as the result of the firm's extensive background and experience with these structures. Although the tower at Lima may be the highest *concrete stave* structure built for this purpose, it is one of the lowest prilling towers ever built, and this is a point of considerable interest. Building a low prilling tower is considered an engineering feat—one for which the Uhde Company is particularly noted.

Colonial Block Co. Develops New, Colorful Masonry Unit

A new, colorful masonry unit, available in hues of brown, red, green, purple, yellow, and gray, has been developed by the Colonial Block Corporation, Norfolk, Va.

Called Colonial Stone, the new product comes in four sizes, ranging from 2-in. to 6-in. widths and 16-in. lengths.

In manufacturing this product, the stone is first made in regular blocks, and is then split.

Coming Events

November 12-19, 1956 — Tucker's Town, Bermuda. 8th annual convention and meeting, American Concrete Pressure Pipe Association. Castle Harbor Hotel.

November 14-16, 1956 — Miami Beach. 13th annual meeting, Southeastern Concrete Masonry Association. Eden Roc Hotel.

January 16-17, 1957—Milwaukee. 36th annual convention, Wisconsin Concrete Products Association. Plankinton Hotel.

February 11-14, 1957—Los Angeles. 27th annual meeting, National Ready Mixed Concrete Association. Statler Hotel.

February 25-28, 1957—St. Louis. 37th annual convention, National Concrete Masonry Association, and 10th biennial show, Concrete Industries Exposition. Kiel Auditorium.

Ohio Supreme Court Rules Batching Equipment is Part Of Manufacturing Plants

Boardman Supply Company, Youngstown, Ohio, ready-mixed concrete producer, has rendered a real service to the industry in the prosecution of an appeal from a sales tax assessment on a batching plant recently purchased from the Heltzel Form and Iron Co., Warren, Ohio.

Without reviewing all the details of the case in point in its journeys through the lower courts, it is sufficient to relate that the high court declared that the personal property consisting of concrete blocks, steel plates, scales, conveyors, bins, etc., is an integral part of a batching plant for the *manufacture* of concrete. In such category, the equipment, in the opinion of the court, could not be assessed as *storage*, and therefore is *exempt from the Ohio sales tax.*

The Ohio Ready Mixed Concrete Association, in informing its members of this action, stresses the importance of this decision which places batching bins in the category of "batching bins, etc.," and not as "storage bins." It is felt that its result may influence other courts which may in the future decide that such equipment is for storage, and therefore taxable.

New $250,000 Block Plant Built by Jackson Stone Co.

At Jackson, Miss., a new $250,000 concrete block plant went into production recently with a capacity of 1,500,000 concrete block per year. The newly completed facility is that of the Jackson Stone Company, owned by Sam Bailey and Harry Fulcher. It has double the curing and storing capacity of the original plant which it replaces.

W. J. Shore, engineer and consultant, was retained to supervise the installation of the curing system. Conveyors and bins were designed by the Butler Bin Company, and a Besser Vibrapac concrete block machine was installed.

James E. Poythross has been named sales engineer for Form-Crete steel forms in the Northeastern section of the United States. Mr. Poythross will make his headquarters in Alexandria, Va.

Some of the 300 guests attending the Southern California Rock Products and Ready Mixed Concrete Assn. dinner.

Calif. Rock-R.M.C. Firms Entertain 300 Guests At Industry Dinner

By HARRY F. UTLEY

More than 300 engineers and others prominently identified with the southern California building industry were guests of the Southern California Rock Products and Ready Mixed Concrete Associations at an industry dinner honoring the engineering profession on the evening of September 26.

The gathering, held in the Statler Hotel in Los Angeles, was highlighted by an address on ready-mixed concrete specifications and their administration, by Stanton Walker, director of engineering of the national associations.

Robert Mitchell, president of Consolidated Rock Products Company of Los Angeles and currently the president of the National Ready Mixed Concrete Association, served as master of ceremonies.

Mr. Walker introduced his subject by outlining and defining three broad approaches to specifying concrete. The "prescription" type allows the purchaser to specify the ingredients, proportions, and consistency of the concrete. The "performance" type lets the buyer specify strength and certain other job characteristics and leaves it to the ready-mix producer to select materials and proportions to achieve desired strength and other factors. More recently the so-called "double-barreled" specification has evolved, wherein minimum cement factor, maximum water ratio and strength, as well as slump, aggregate sizes, etc., are all specified.

Mr. Walker went on record as favoring the prescription type, terming it the most protective for everyone concerned. However, he said that the prescription must be based on properly-controlled laboratory tests which demonstrate that concrete of the required quality will be produced. These tests, he declared, should reflect minimum strength-producing properties of available cement, minimum qualities of aggregates meeting specifications, and maximum slumps of concrete which are permissive. They should never reflect results of special tests made with better-than-average materials and lower-than-average slumps.

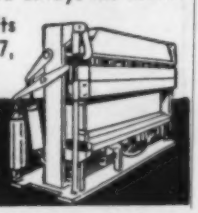
Sharing the speakers' table with Mr. Mitchell and Mr. Walker were Vincent P. Ahearn, executive secretary of the national associations; Noel J. Redmond, president of the Southern California Ready Mixed Concrete Association, and Harold E. Bender, president of the Southern California Rock Products Association.

Pull a lever and there are the lintels . . . on the PreCaster

133% more lintels!

• Compared to the 200 feet of lintels made by hand by one man in a 9-hour day, Radel Concrete Products, Cincinnati, believes their two-man 9-hour production of 750 feet of lintels on the *PreCaster* is worth the consideration of every forward-looking block manufacturer. Radel Concrete Products emphasizes that their high standards may keep down their *PreCaster* lintel production record. ***But it now averages about 133% more than hand production.*** Radel also testify that lintels made on the *PreCaster* match color and texture of their regular blocks. And they are always the same!

• Get the full story how you can up your 1957 profits from PreCaster, Inc., 5217 Beech Street, Cincinnati 17, Ohio.



PRECASTER

"I wish I'd done it 2 years ago . . .

MOTOROLA 2-WAY RADIO STARTED BOOSTING PROFITS THE DAY IT WAS INSTALLED"

"2 years ago I felt handcuffed, watching my competitors building up their business while we were left at the post . . . listening to customers complain and eventually drift away. I had heard of 2-way radio, but I was "on the fence" about it. Others were using it and actually taking my customers away from me with better service.

"So I decided to take the plunge—and that turned out to be the happiest business day of my life. Motorola 2-way radio cuts costs a dozen ways and gets more work from every truck. Single handed, it has taken our hit-and-miss operation and made it into a smooth-functioning, profit-making unit.

"With better service we're keeping our present customers and winning many of the old ones back. News gets around and we're putting new customers on our books every day. I was pretty late in discovering 2-way radio, but now it runs a close second to trucks as the most important tool in our organization. Before I invested, I learned that Motorola furnishes more 2-way radio than all others combined. The reasons become more obvious after using it for 2 years."

Write, phone or wire TODAY

MOTOROLA

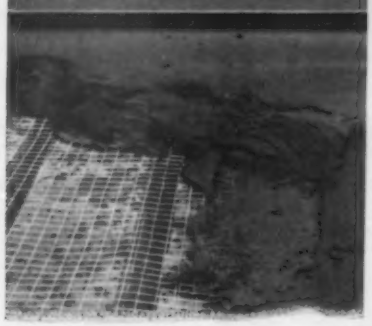
2-WAY RADIO

MOTOROLA COMMUNICATIONS & ELECTRONICS, INC.
A SUBSIDIARY OF MOTOROLA, INC.
4501 AUGUSTA BOULEVARD • CHICAGO 51, ILLINOIS

Motorola consistently supplies more mobile and portable radio than all others combined.
Proof of acceptance, experience and quality.
The only COMPLETE radio communications service—specialized engineering...product...customer service...parts...installation...maintenance...finance...lease.
"The best costs you less—specify Motorola."

Elastizell®

. . . the best way to make a light weight structural concrete



Elastizell-type light weight insulating concrete is here used as an integral pour for both beam and topping in a soffit tile concrete masonry roof. This roof is over steam curing kilns in a concrete block plant.

ADVANTAGES:

- less heat loss through roof, thus reduced block curing cost
- less moisture penetration, thus longer roof life
- greatly reduced initial kiln installation cost, due to far less complex roof construction
- uniform flow around steel, without vibration, for continuous bond
- reduced maintenance cost
- reduced dead load

AMONG OTHER USES OF ELASTIZELL-TYPE CONCRETE: dry, self-insulating slab-on-grade . . . light weight, easy-to-handle floor fills in multi-storied construction . . . light weight structural members . . . insulation for underground pipe lines . . . precast slabs and panels.

Write, wire or 'phone . . .

ELASTIZELL CORPORATION OF AMERICA
815 WEST MILLER STREET • ALPENA, MICHIGAN
'PHONE 1080

New officers and directors of the New York State Concrete Masonry Association. Seated: Larry D'Agostino, vice-president; William Homer, president; Salvatore Picone, secretary; and Ralph Dalby, treasurer. Standing: William Cossitt, Fred Reinhold, John Daly, Benjamin Palmer, Lee Taylor, and Henry Quaritius—all directors.

Homer Succeeds Quaritius As N.Y.C.M. Assn. President

Block producers and representatives of allied industries in New York (state) and other areas attended the two-day annual meeting of the New York State Concrete Masonry Association at the Hotel Roosevelt in New York City on October 11 and 12. Attracting the largest number ever to attend an annual meeting, the two-day session was hailed as the most successful ever conducted by the association.

William C. Homer, Barnes & Cone, Inc., Syracuse, was elected the new president, to succeed Henry C. Quaritius Jr., Nailable Cinder Block Corp., Brooklyn. In addition, the following officers were chosen: Lawrence Dagostino, Dagostino Building Blocks, Schenectady, vice-president; Ralph J. Dalbey, Comac Builders Supply Corp., Rochester, treasurer; and Salvatore Picone, Picone Bros. Building Supplies, Inc., Brooklyn, secretary.

Mr. Dalbey and Benjamin H. Palmer Jr., Southern Tier Concrete Products, Inc., Alfred, were newly elected to the board of directors.

An appropriation of $1,000 to establish scholarships in architecture and engineering was voted by the members. These scholarships will go to worthy students attending schools in New York state.

Carl A. Menzel, concrete technical problems consultant for the Portland Cement Association, and well known to the engineering profession for his extensive research and development work on building materials, testing, and construction techniques, was one of the featured speakers. He addressed the meeting on the subject of *The Importance of Determining the Moisture Content in Concrete Masonry.*

Richard W. Darrow, executive

Henry Quaritius (retiring president), congratulating the winners of the concrete masonry home design competition, left to right: John M. Paul, E. H. Paul, P. S. Raspante, R. R. Braydon, and Barry Gourley.

vice-president of Hill and Knowlton, Inc., New York, spoke on the need for good public relations, not only within the association but also in each individual plant.

R. E. Copeland, director of engineering, National Concrete Masonry Association, told the members of the plans of N.C.M.A. for its new laboratory and office building project. He was introduced by Frederick W. Reinhold, a member of the N.C.M.A. board, and an organizer of the New York state group.

Other speakers included the following: John J. Reilly and Roger Starr Contracting Co.; Paul M. Woodworth, Waylite Co., Chicago; and Nelson Wray, Portland Cement Association, who presented that organization's new promotion kit.

Peter Blake, architectural editor of *House and Home* magazine, spoke on *The Place of Concrete Masonry in Contemporary House Architecture.* Alex Yeats, Portland Cement Assn., also spoke briefly.

Architects who won the top three awards in the concrete masonry home competition, conducted by the state association in co-operation with the New York State Association of Architects, were guests at the luncheon on the second day.

Blame Ineffective Anchorage In Florida Roof Slab Collapse

A committee of engineers appointed by the president of the Prestressed Concrete Institute has studied and analyzed the reports made by consulting engineers for the general contractor and for the manufacturer of the prestressed concrete roof deck on the Blankner Elementary School roof, Orlando, Fla.

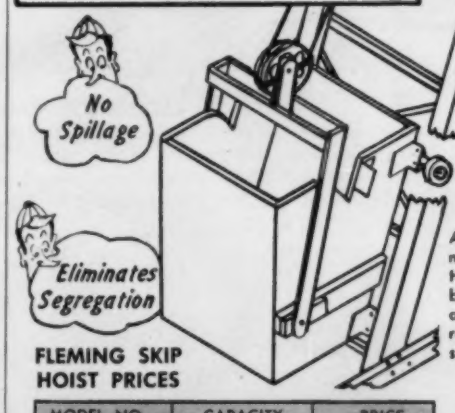
The principal cause of the collapse on August 30, 1956, of a small portion of the roof is attributed to an accumulation of water on the deflected roof deck, resulting from a torrential rain. This condition was greatly intensified by a continuous runoff from the contiguous pitched roof. The combined effect of this water induced excessive deflections progressively and thereby greater loads on the prestressed concrete double-T slabs, with commensurate lateral pressure on the walls.

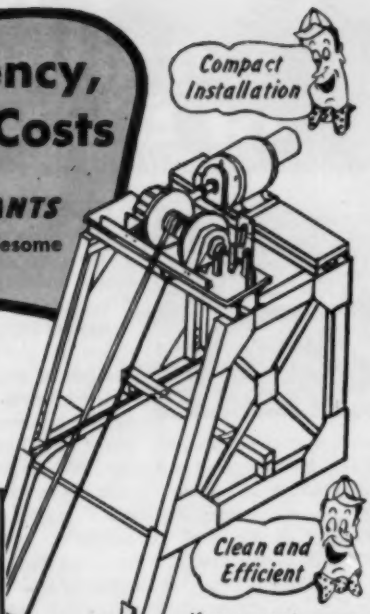
The 14-ft. high walls, built of 8-in. block, without pilasters, were capped by shallow precast concrete blocks for deck support. These units were ineffective for slab anchorage.

It is the consensus that the use of reinforced pilasters and continuous concrete tie-beams would have averted the collapse.

Step Up Efficiency, Cut Operating Costs
OF ONE-LEVEL CONCRETE BLOCK PLANTS
by Replacing Wasteful, Troublesome Belt Conveyors with
FLEMING SKIP HOISTS

FOUR SIZES
14-28-36 and 50-Cu. Ft. Capacities—to Fit Your Requirements. Completely Automatic Operation.





If you operate a one-level block plant, you know that production stoppages caused by spillage, and man-hours of costly clean-up time cut into your profits. Best way to eliminate them is to install a Fleming Skip Hoist to elevate the mix to the hopper on top of your block machine. Then you're sure of getting peak production of concrete block day-after-day, and never have to worry about mix spilling over the sides of a conveyor belt and "hanging it up" . . . or time wasted digging out overflow to free the belt . . . or cost of extra cement required to bring recovered material back to life. What's more, the job of sweeping-up around quitting time is reduced to mere minutes because Fleming Skip Hoists are clean-operating — not messy — thus saving you about a half hours' labor every day.

Available in four sizes and capacities to meet your individual needs, Fleming Skip Hoists work efficiently with any make block machine. They are rugged, compact, automatic. Eliminate spillage, prevent segregation. Sturdy all-steel construction assures long, trouble-free performance.

FLEMING SKIP HOIST PRICES

MODEL NO.	CAPACITY	PRICE
FMC-14	14 Cu. Ft.	$1490.00
FMC-28	28 Cu. Ft.	$1990.00
FMC-36	36 Cu. Ft.	$2490.00
FMC-50	50 Cu. Ft.	$2850.00

FLEMING
MANUFACTURING CO.
487-K FLEMING AVE., CUBA, MO.

Fill Out This Coupon —

MAIL TODAY! for Complete Details on Fleming Skip Hoists.

Fleming Manufacturing Co.,
487-K Fleming Ave., Cuba, Mo.
Please rush complete specifications, including terms, on Fleming Skip Hoists.
Also request information on:
☐ Flem-Stone Automatic Block Splitter
☐ Automatic Single and Double Block Machines.
Name _____
Firm _____
Address _____
City _____ Zone ___ State _____

How job site batching with supplier $920,000 contract of 5 stationary plants

On the southern outskirts of San Francisco above San Bruno is a 5000 acre hillside area of new subdivision and shopping center construction. 6 ready-mix suppliers were in position to bid on the contracts: 5 stationary plant operators and Cupertino Concrete Co., the one Noble-Mobile batching plant on wheels operator. Cupertino was able to take the job at a price 8% below the nearest competitor yet make a profit averaging 6%. By driving his Noble-Mobile to the job site and producing there, Cupertino reduced transit truck hauls to a maximum of 2 miles and saved over 50% on hauling costs. Each Cupertino transit truck works an average of 6 hours a day making up to 12 trips of 5 yards per trip, totaling 60 yards of concrete per day per truck. 60 yards supplied from the nearest competitive stationary plant would have required 2 to 3 trucks. Cupertino saves up to 8 transit trucks.

When the job started in August, 1954, Cupertino located the Noble-Mobile in the center of the first project so the maximum haul would be only 1 mile. On completion of that project and the beginning of another project 1.5 miles distant, Cupertino closed shop on a Friday night and by the following Monday morning had dismantled, moved and reassembled the Noble-Mobile in the new location and was delivering concrete. The cost of setting up the Noble-Mobile in the new location was a mere fraction of what it would have been to install a stationary plant. Saved were the weeks and even months wasted in cutting through legal red tape to secure permits and complete construction. A further source of profit is the do-it-yourself residents of the newly completed homes.

Batching plant on wheels driven to the job site saves erection costs, taxes, site availability problems. Purchase is easier to finance than stationary plants. Pays for itself in savings from shorter hauls. Saves outlay for extra transit trucks and cost of depreciation. Many producers maintain one or more Noble-Mobiles in reserve to handle sudden surges of business and to discourage competitors from stepping in.

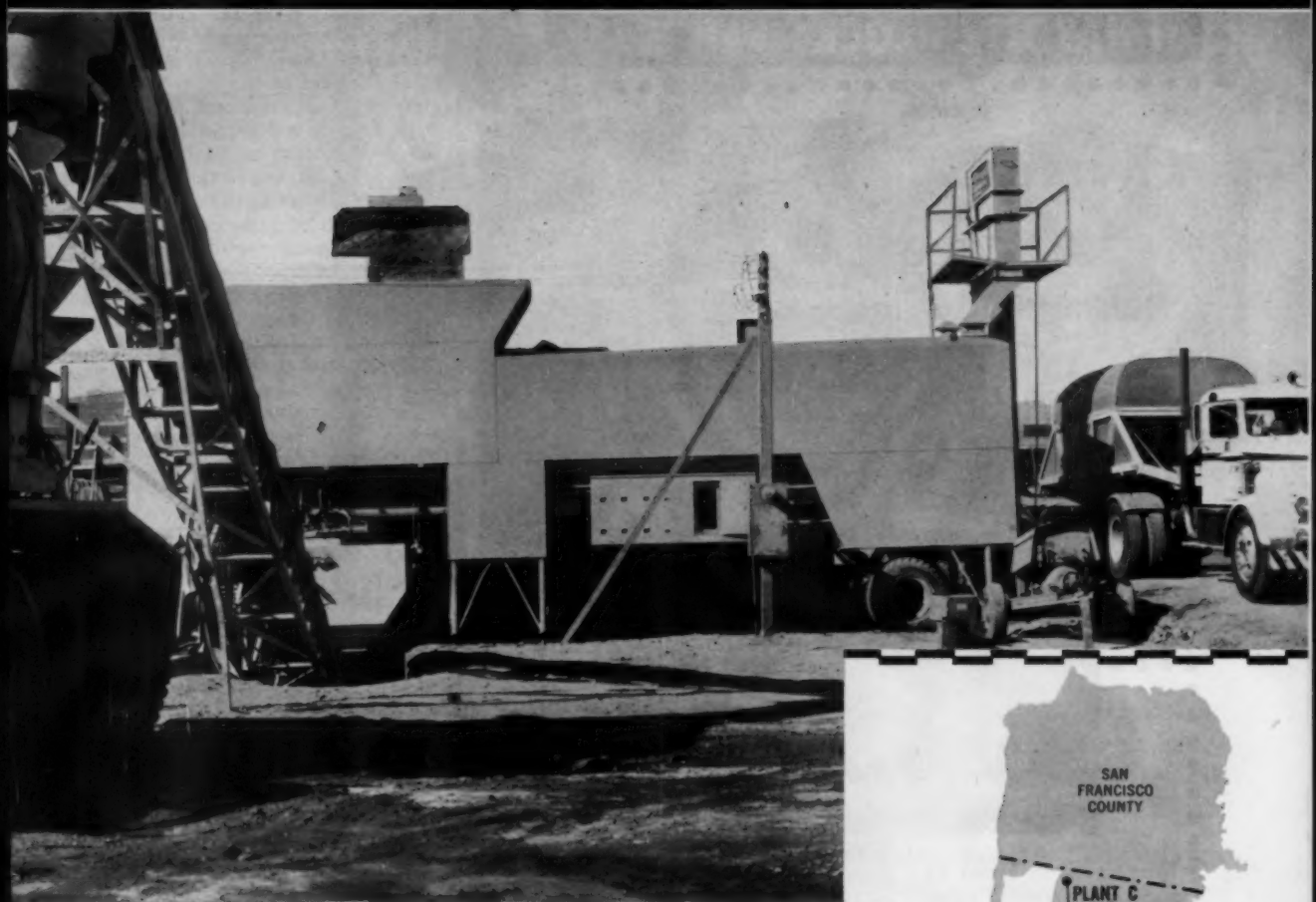
Pouring site on 16 per cent grade 1.9 miles below Noble-Mobile plant. Arrow points to closest stationary plant 3.4 miles distant. Noble-Mobile was stationed above construction area so all hauls would be downhill. Competitors had to compute costs on slow, ponderous up-hill drags.

Concrete for 10,000 homes in a 10 year building program! $35,000 Noble-Mobile batching plant, located 2 miles above, supplies concrete for foundations, sidewalks, retaining walls, driveways, patios.

NOBLE-MOBILE Batchmobile
Covered by patents pending

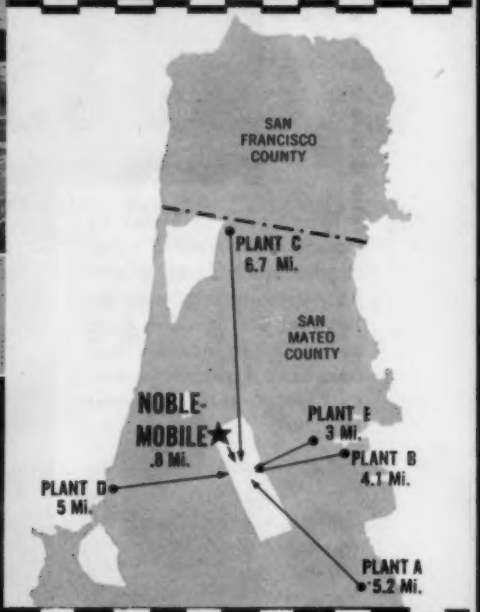
WRITE FOR CIRCULAR
THE NOBLE COMPANY • 1860-7TH ST., OAKLAND 20, CALIF. • TEMPLEBAR 2-5785
Branches: 20950 Center Ridge Road, Cleveland 16, Ohio. EDison 1-3426
518 First Ave. North, Seattle, Wash. MUtual 4878
218 Richmond St., El Segundo (Los Angeles), Calif. EAstgate 2-4518
International Sales Agent: Frazar International Corp., San Francisco

NOBLE-MOBILE got at 6% profit against bids



Supplies up to 400 yards per day to transit trucks. Bulk cement storage with truck hopper unloading screw and elevator. Weighs aggregates and cement separately and simultaneously. Automatic or semi-automatic control. Set up in 1 day. No field wiring, concrete foundations or crane time required on base plant.

Fed by scooploader from aggregate and sand piles. Cost to haul aggregates, sand and cement from producing site to Noble-Mobile no more than to haul to general area where competitors' stationary plants are located. Plant may also be fed by conveyor or crane.

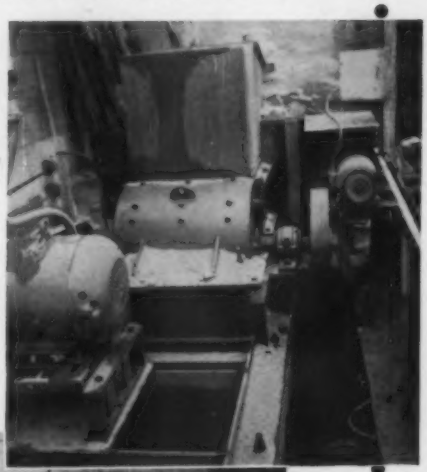


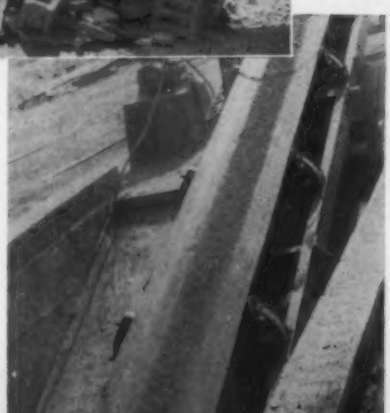
Map of construction areas south of San Francisco showing Noble-Mobile site and competitors' stationary plants — A, B, C, D, E. Note the .8 mile haul from the Noble-Mobile compared with the up to 6.7 mile hauls from the others. "Economics of job-site batching are so sound no outside stationary plant can compete," reports Bob Soldini, Cupertino Concrete Company.

DISTRIBUTORS: BIRMINGHAM, ALA., Equipment Service Co. • PHOENIX, ARIZ., Superior Equipment Co. • VANCOUVER, B. C., Westcoast Equipment Co., Ltd. • DENVER, COLO., Western Machinery Co. • BALTIMORE, MD., General Supply & Equipment Co., Inc. • CEDAR RAPIDS, IOWA, James W. Ball Co. • INDIANAPOLIS, IND., Manwaring Machinery Co. • DETROIT, MICH., R. G. Moeller Co. • ST. PAUL, MINN., Borchert-Ingersoll, Inc. • CLEVELAND, OHIO, Wepco Equipment Co. • LOS ANGELES, CALIF., Smith-Booth-Usher Co. • PORTLAND, ORE., Clyde Equipment Co. • PHILADELPHIA, PA., Furnival Machinery Co. • PITTSBURGH, PA., Equipment & Supplies, Inc. • AMARILLO, TEXAS, Plains Machinery Co. • DALLAS, TEXAS, North Texas Equipment and Supply Co. • HOUSTON, TEXAS, Boehck Engineering Co. • EL PASO, TEXAS, Border Machinery Co. • WACO, TEXAS, Richards Equipment Co. • SAN ANTONIO, TEXAS, Contractors Machinery Co. • SALT LAKE CITY, UTAH, Arnold Machinery Co. • SEATTLE, WASH., Star Machinery Co. • SPOKANE, WASH., Intermountain Equipment Co. • CASPER, WYOMING, Studer Tractor & Equipment Co. • MONTREAL, QUE., Laurentide Equipment Co., Ltd. • WINNIPEG, MAN., Huggard Equipment Co., Ltd. • BOSTON, MASS., Hedge & Matthais Co. • LOUISVILLE, KY., Emmett C. Watson Co. • NASHVILLE, TENN., Peterson Machinery Co.

RECLAIMS 9 TONS of HAYDITE BLOCKS PER WEEK

...PAYS FOR American HAMMERMILL IN 6 MONTHS!





● This American Series 24 Hammermill is crushing culled Haydite blocks up to 12" x 8" x 16" to reusable ⅜" material. With Haydite priced at $5.50 per yard, this manufacturer paid for his American Hammermill in less than 6 months operation.

Culled Haydite, Concrete or Cinder Blocks can be easily crushed to minus ⅜" material and mixed with new material. The resulting savings quickly pay for the cost of the equipment and give you a substantial profit thereafter, as well as eliminating the hauling away of culls.

WRITE FOR LITERATURE DESCRIBING COMPLETE LINE OF AMERICAN HAMMERMILLS

American PULVERIZER COMPANY — Designers and Manufacturers of Ring Crushers and Pulverizers

1059 Macklind Ave. • St. Louis 10, Mo.

A.S.C.E. Expands Research In Reinforced Concrete— New Committees Named

The Committee on Masonry and Reinforced Steel Concrete, Structural Division of the American Society of Civil Engineers, has taken steps toward wider participation in the development of information on new fields in reinforced concrete. Four committees have been appointed to report on recommended practice in as many rapidly developing fiields of design and construction.

Alfred L. Parme, Portland Cement Association, Chicago, heads a committee on limit design. Members of this group will study readjustment of moments in frames and other indeterminate structures due to plastic action. This study will supplement the recent A.S.C.E.-A.C.I. Joint Committee Report on Ultimate Strength Design.

Jack R. Janney, Chicago consulting engineer, has been named chairman of a committee on precast structural design and construction, a fast-expanding field held to be seriously in need of standards.

A third group, headed by Dr. Ivan M. Viest, University of Illinois research professor, will examine interaction of concrete decks on steel, timber, and precast concrete supporting members.

Albyn Mackintosh, Los Angeles consulting engineer, is chairman of a committee on reinforced masonry design and construction. This group will develop recommended practice for reinforced masonry construction. The American Concrete Institute has approved co-sponsorship of the committees on limit design and composite construction.

The Joint A.S.C.E.-A.C.I. Committee on Reinforced Concrete Slabs, headed by Dr. Nathan M. Newmark, chairman of the University of Illinois, department of civil engineering, has set up a test program a four-year, $140,000 experimental program sponsored by the Reinforced Concrete Research Council of the Engineering Foundation.

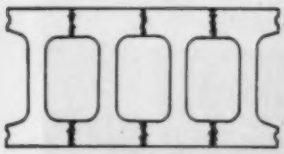
The Committee on Prestressed Concrete, under Thor Germundsson, Portland Cement Association, Chicago, expects to ballot soon on its final report. Publication is scheduled for early next year.

Raymond C. Reese, Toledo consulting engineer, heads the Joint A.S.C.E.-A.C.I. Steering Committee on the 1940 Joint Committee Report. This body has recommended that the old Joint Committee Report on Concrete and Reinforced Concrete

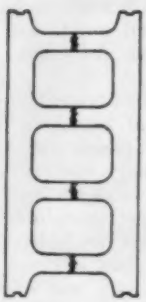
(*Continued on page* 268)

UPT

Evolution of the PERFECT BLOCK

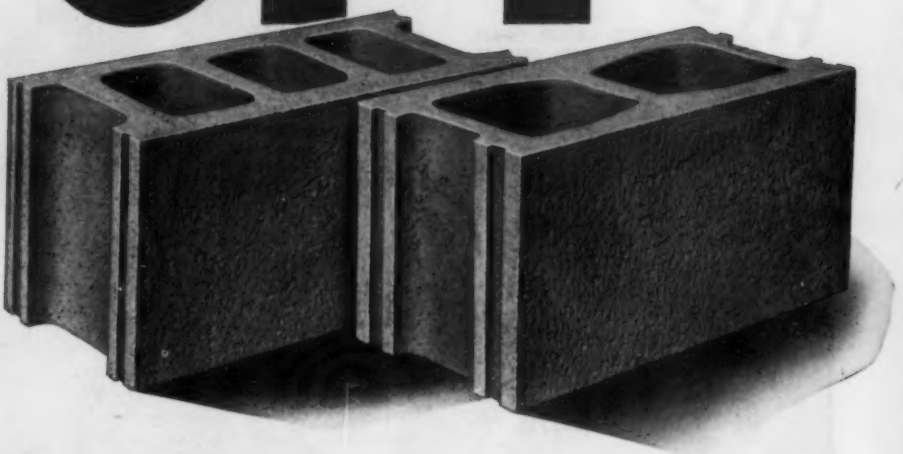


1924 — Besser introduced the Plain Pallet Stripper Tamper. Core plate marks were visible on the top face of each block.



1936 — Besser turned the block around, thereby moving the core plate marks to the center of the web. This was a great improvement.

1955 — Besser swung the stripper shoes UNDER the core plates, thereby eliminating ALL core plate marks on the block.



Now! Besser Gives You UPT— a Block with 100% PRESSED TOP

The Besser policy of continuous improvement is again illustrated in the block with Uni-Pressed Top. This revolutionary new feature incorporates swinging stripper shoes which create a 100% PRESSED TOP. All six sides of the block now have improved texture.

How is this accomplished? Very easily and very effectively. The stripper shoes swing under the raised core plates to form a direct contact with the other stripper shoes. In effect, each pair of shoes becomes ONE and presses the entire area of block surface. The higher division plates perfect edges and corners by pressing more material at these points.

FLOOR AND ROOF PLANK — The UPT feature is ideal for producing floor and roof plank because grinding of contacting surfaces is reduced to a minimum.

SOFFIT BLOCK — The UPT feature eliminates the core plate marks. Saves labor previously spent in preparing block for use. Greatly improves appearance of exposed ceilings.

PLAIN END OR CORNER BLOCK — With UPT, the core plate mark is now completely eliminated on the end of block. Perfects corners of buildings and ends of walls.

Investigate UPT for your plant. Get facts from your Besser representative, or write:

BESSER VIBRAPAC — the fully automatic concrete block machine. Produces high quality masonry units, of any desired texture and density, at the lowest possible cost.

A 8814-1PBC

BESSER COMPANY

World's Leading Manufacturer of Concrete Block Machinery

ALPENA, MICHIGAN, U.S.A.

SIMPLICITY plus
VERSATILITY

HYDROTILE

CUTS LABOR COSTS
and BOOSTS OUTPUT

A Real Profit-Maker

for both large and small size concrete pipe

Model 6-24, Makes up to 24" diameters and lengths up to six feet. Rubber gasket or plain.

FOUR PIPE MACHINES

Featuring fingertip hydraulic controls, powered turntable, vibrating ball packer and rotary header, direct drive with seven packershaft speeds just by shifting gears.

SIX DRAIN TILE MACHINES

Featuring full automatic operation.

Write for Bulletin and complete Details

HYDROTILE MACHINERY CO.

NASHUA, IOWA

Present construction status of the new precasting plant of the Winkrete Precast Company, Syracuse, N. Y., immediately adjacent to the New York Thruway.

Production Line Precasting Used at Winkrete Plant To Make Double-T Panels

Nearing completion on a 20-acre site near Syracuse, N. Y., is the new plant of Winkrete Precast Company, Inc., a subsidiary of the D. W. Winkelman Co., a Syracuse heavy construction firm. The site is near an interchange of the New Jersey Thruway, for easy hauling of concrete products throughout central New York. As shown in the accompanying illustration, the plant is built of precast and prestressed members. These are produced on the job site in the same molds which will be used for sales production. Precast concrete wall panels will enclose most of the building.

The main product will be lightweight concrete double-T slabs with mild steel reinforcing cast in cambered molds made by the Irvington Form & Tank Company. The aggregate used is Haydite, made by Onondaga Brick Company, Warners, N. Y., another Winkelman subsidiary.

The molds, up to 33 ft. in length, will be moved by cranes and roller conveyors through the production cycle, which occupies two bays of the four-bay building. One of these two bays will contain a steam chamber where the filled molds will be stacked in four or five tiers for curing.

A third bay will be devoted to prestressing beams and long-span T's, and precasting wall panels and other heavy items under two 10-ton Wright bridge cranes. A 600-ton capacity universal-type pretensioning bed is located in this bay under the cranes. The fourth bay will contain shops, boiler room, etc., and will be used for assembling the reinforcing cages for double-T production. A low wing will house the shop and administrative offices.

The pushbutton Burmeister concrete plant has been designed to allow for future production of both transit-mixed and central-mixed concrete. Two Praschak horizontal 50-cu. ft. mixers will serve the precast plant, chuting the mixed concrete directly into the plant into either a bucket handled by the bridge cranes in the prestress bay, or into a surge hopper under which the cambered molds pass on a vibrating conveyor.

(*Continued on page* 244)

A few of the steel form molds with built-in camber, which are being used to produce double-T slabs for the new plant.

HYSTER INDUSTRIAL TRUCKS MOVE MATERIALS *FASTER!*

at Greater PROFIT to You

"King of Lift Trucks" the RC-150 handling concrete pipe 48 inches in diameter, 16 feet long and weighing 11,250 pounds. Working under very adverse ground conditions.

Pictured above is one of many typical examples of how Hyster® Industrial Trucks are helping to effect tremendous savings in the cost of handling Concrete Products.

Even if you are now using lift trucks or have never used industrial trucks of any kind, your Hyster dealer can show you how you can quickly realize more profit from your operation with these multi-purpose utility tools. Your Hyster dealer knows materials handling . . . he is an expert on the problems and their solution. He can help you with special techniques and cost reducing methods. Call him today...why not take advantage of his materials handling know-how?

HYSTER DEALERS GIVE YOU ALL 3!

1. **PLANNING** — your Hyster Dealer will plan your materials handling operation from scratch, or will analyze your present system to see if it can be improved.
2. **THE RIGHT TRUCK** — for *your* job from Hyster's complete line of industrial trucks (1,000-30,000 lbs.) and over 100 job-attachments.
3. **THE RIGHT SERVICE** — ample spare parts stock, shop facilities, factory-trained mechanics and an efficient field service that keep your Hyster lift trucks going on your job, wherever your job might be located. Hyster trucks are noted the world over for their low downtime.

Materials Handling Trucks from 1,000 to 30,000 pound capacities

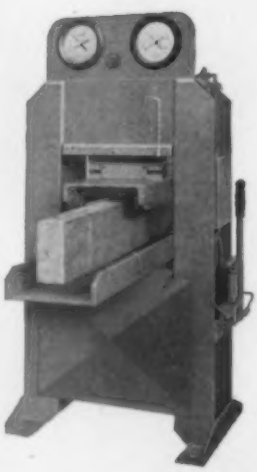
2926 N. E. CLACKAMAS, PORTLAND 8, OREGON
1026 MYERS STREET.....DANVILLE, ILLINOIS
HYSTER N.V.....NIJMEGEN, THE NETHERLANDS
FOUR FACTORIES: Portland, Oregon; Danville, Illinois; Peoria, Illinois; Nijmegen, The Netherlands.

HYSTER

HYSTER COMPANY

FORNEY

Compression & Flexure Testers



WHY SHOW YOUR CUSTOMERS AND PROSPECTS TEST REPORTS WHEN IT'S SO EASY TO SHOW THEM ACTUAL TESTS?

Forney's Inc. offer a complete line of Compression and Flexure Testers for use in either plant or laboratory at prices well within your reach.

Write today for descriptive literature covering the complete line and let us tell you how its possible for you to have the tester best suited to your needs at a price you can easily afford to pay.

Forney's Inc. Tester Div.
Box 310 · New Castle, Pa.

• Clipper saw rig used at the Blue Island, Ill., plant of Illinois Brick Company for the production of half block and special shapes. This rig has been operating for nearly ten years at Illinois Brick, and another similar Clipper rig has been purchased in the interim. The plant is one of the largest and most modern in this country, and produces over 30,000 units daily, all high-pressure-steam cured.

Canadian Concern Adds Concrete Pipe to Products

Deeks-McBride Ltd., a Vancouver builders' supply firm, has established an $80,000 plant for the manufacture of concrete pipe.

Located beside the Burrard Inlet, C.N. and P.G.E. rail lines, and the Dollarton highway, the plant is easily accessible to all parts of British Columbia.

Up to 1,000 linear feet of sewer or culvert pipe, meeting A.S.T.M. specifications, can be produced daily. Current production covers pipe ranging in diameter from 6 to 36 in., and another machine soon to be installed will turn out 1-ft. lengths of 4-, 6-, and 8-in. drain tile.

John M. Swickard, 60, partner in Swickard and Crissman Concrete Block Company, died recently in his home at Columbus, Ohio.

Precasting at Winkrete

(*From page* 242)

Winkrete already has a number of contracts for complete building frames, as well as for double-T slabs, and commercial production proceeds outdoors as rapidly as the molds are released from casting the members for the construction of the new plant.

The new plant was designed by Harold Anson, chief engineer and general manager of Winkrete. Al Warnke is plant superintendent, James Kane is sales representative. Kenneth E. Brown is vice-president of the parent company.

"GUESSTIMATING" moisture content of sand is out of date!

• Instantaneous direct reading

• Simple installation—no skill required

. . . thanks to the ELECTRONIC

MARK X H_2O METER

NOW ready mix and concrete block producers can obtain continuous determination of moisture in fine aggregate with the Electronic MARK X H_2O Meter. This unique instrument uses the field proven alternating current bridge in its measuring circuit.

Priced low, guaranteed accurate and maintenance free, the MARK X insures controlled, uniform concrete . . . offers profit protection for the producer, and product satisfaction for the customer!

Write or phone for information or list of users

• Available for both silica sand and limestone screenings

• Small compact design

• Priced at $178.00 delivered any place in the U.S.

USED IN **95%** OF READY MIX PLANTS IN THE MIAMI AREA

NATIONAL READY MIXED NRMCA CONCRETE ASSOCIATION

SARASOTA ENGINEERING CO., INC.

Office and Factory: 2010 Pine Terrace

P. O. BOX 1329, SARASOTA, FLORIDA • CABLE ADDRESS: SARENCO

New FWD-only sure way to guarantee delivery anywhere!

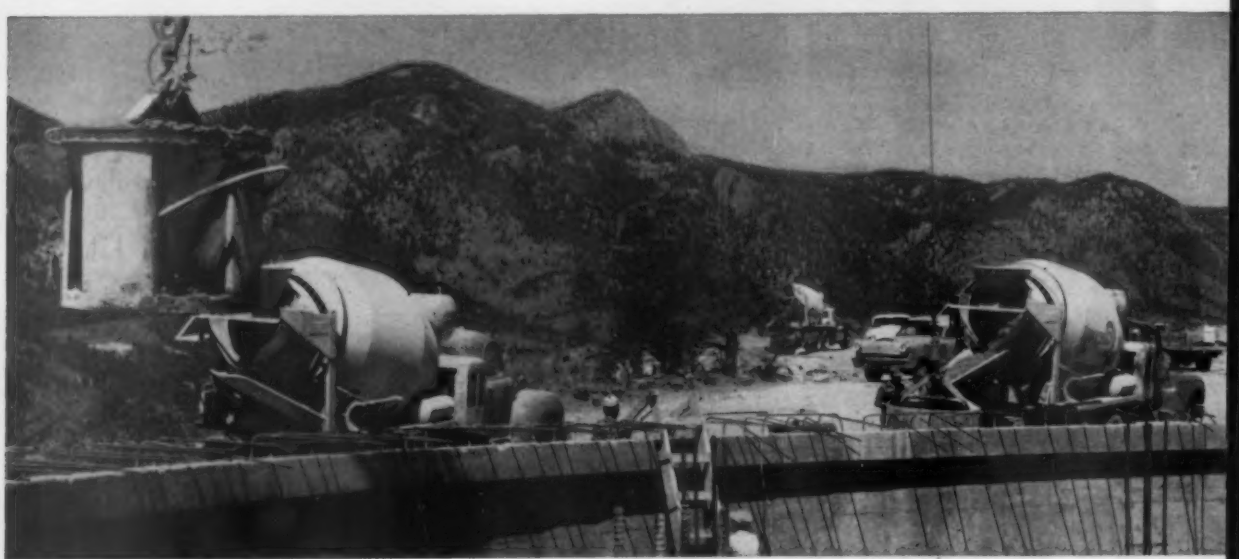
Every Ready-Mix fleet needs one or more FWDs. It's the only way to guarantee get-there service on the tough hauls! These rugged Ready-Mix specialists carry maximum loads through mud, sand or uneven terrain of construction-sites and spot the load right where you want it.

These aren't ordinary trucks. They have the unmatched power and traction that made FWD famous! This is full time 6-wheel drive with both power and weight proportioned between 3 live axles. For city deliveries they are snappy in traffic, easily maneuverable with power at every wheel. Haul bigger payloads and guarantee your deliveries with new FWDs built especially for the Ready-Mix market. Write for the facts today!

Heavy-Duty Vehicle Specialists

THE FOUR WHEEL DRIVE AUTO COMPANY • CLINTONVILLE, WISCONSIN • Canadian Factory: KITCHENER, ONTARIO

FAST WORK ON TUNNEL WALLS: Jaeger's 3-speed transmission provided fast charging and discharging of 6-yard batches of 3″ to 4″ slump concrete for Detroit utility tunnel. Mixer is latest Model 5½ HMD.



ONE UP, ONE POURING, ONE AWAY: "Jaeger mixers certainly mix and handle this 2″ slump concrete beautifully," comments E. F. Matelich of Matelich & Hansen, Inc., contractors on the potable water reservoirs for U. S. Air Force Academy, Colorado Springs, Colorado. Five Jaeger "Mix Plus" truck mixers, delivering 6-cubic yard batches with a 6 mile trip-haul, poured 700 yards of 2″ slump material for the heavy floor slab.

BATCHES, LAID END TO END, MEASURE 8580 FEET: For 978 ft. Breach Inlet bridge at Charleston, S. C., Redi-Mix Concrete Company's Jaeger truck mixers supplied 1678 yards of Class A concrete and the material for 8580 linear feet of 21″ octagonal concrete piling which was precast on the site.

3-speed Jaeger hits the buckets faster

Talk to any operator of the Jaeger Model "D" truck mixer. He'll tell you he would never go back to a 2-speed outfit.

With his Jaeger 3-speed transmission, he can fast charge at 16 rpm drum speed and then drop down as slow as 1½ rpm for long haul agitation. On the job he can discharge at any rate he wants. Low-low speed gives him ample power to discharge stiff concrete even as slowly as a cupful at a time. This broad range of operation is all within proper engine speed range of 800 to 2000 rpm.

With the further advantage of Jaeger's bigger throated hopper and 25% larger discharge blades, you can out-charge and out-discharge any mixer you've ever owned—often by minutes.

Another thing—today's Jaeger has an extremely short center of gravity. Mounts to advantage on standard trucks, with your choice of optional equipment including either separate engine or long-proved truck engine drive controlled from cab. For details, see your Jaeger distributor—or write us.

CLOSE CONTROL FOR BUGGIES AND BARROWS: With 3 speeds and single lever operation, Jaeger operators easily control speed and volume of discharge of any slump concrete to each customer's need—a drum-load or a cupful.

50th year JAEGER CONSTRUCTION EQUIPMENT

THE JAEGER MACHINE COMPANY

602 Dublin Avenue, Columbus 16, Ohio

COMPRESSORS • PUMPS • MIXERS • PAVING SPREADERS, FINISHERS

R/Ready Mix

By HARRY F. THOMSON
Consulting Engineer
St. Louis, Mo.

A Complex Business

FROM a distance it may appear that the production of ready-mixed concrete is a simple matter—it requires only a machine, either stationary or truck-mounted, to mix cement, aggregates, and water, and then delivery of the resultant batch. Many businessmen, after being impressed by that thought of simplicity, have plunged into the field, only to find that they were in a whirlpool of manufacturing in which they must meet severe requirements and also transport a quickly perishable commodity. But by the time they realized the complex character of the business, they were so involved with the investment—which probably exceeded expectations—that they could not withdraw, and so proceeded to muddle along. To such poorly informed producers can be credited some of today's sloppy practices.

To suggest that the ready-mix business involves complexities is not a new or novel idea. Back in 1930 the following statement was made in an article which was published in several technical magazines. "The commercial operation in ready-mixed concrete is not the simple, somewhat haphazard throwing together of cement, aggregates, and water as implied by the old expression 'concrete mixing,' but is a complex activity involving the characteristics of several standard types of industrial effort."

Of the major types of business involved in a ready-mix enterprise, the most important is manufacturing. That is the heading under which ready-mix production should be classified. Conversion of raw material into a new product or the assembly of sub-items into a new item, comprises manufacturing. The result of mixing cement, aggregates, and water represents conversion into a new material called concrete, which is at first plastic but which quickly hardens into a solid end-product. That the conversion may take place through the agency of either a truck-mixer or a central-mixer does not alter the fact of the manufacturing function.

One important contrast between manufacturing concrete and the general run of manufacturing operation lies in the value added by the conversion involved. Thus the batching and mixing which converts raw ingredients into concrete adds something like 10 percent to the cost of materials, whereas in general manufacturing the value added by conversion is commonly 50 percent or more. The smallness of added value is due to the simplicity of the proportioning and mixing in producing concrete. The cost of trucking in delivering ready-mix probably approaches 50 percent of the cost of the materials used.

The import of the manufacturing function in producing ready-mix was recognized by the early leaders in this field. Nevertheless, during the hectic days of the National Recovery Administration in the 1930's the most strenuous efforts of the officers and staff of the Ready Mixed Concrete Association were required to obtain a separate performance code for the commercial production of ready-mix.

After the government had recognized the ready-mix type of business as a producing industry, it appeared entirely logical for the Census Bureau to list "Mixed Concrete" among the concrete products in its Census of Manufactures. In fact, ready-mix has become by far the largest in value of output among the concrete products, which include such items as concrete block and precast pipe. It will be recalled that ready-mix now absorbs approximately one-third of the output of portland cement in this country, and that proportion has been increasing steadily in recent years even in the face of important expansion in the amount of domestic cement manufactured.

In view of previous recognition of the production character of ready-mix, it was surprising to learn that the Bureau of the Census issued in June, 1956, a new census of the industry under the caption "Ready Mixed Concrete Distributors." The official release stated: "This report covers establishments in the U. S. which engaged the services of one or more employees — and which were primarily engaged in transit mixing and delivering to the job ready-mixed concrete." In the light of this description, the reason the Bureau listed the industry as "distributors," which seems to imply that the producers are middle men, is not clear. In an executive letter to members of the N.R.M.C.A. Vincent Ahearn states his expectation that in the next census of the industry the Bureau will classify this business as "producing ready-mix."

Incidentally, this recent government report states that in 1954 there were 1,996 establishments engaged in furnishing ready-mixed concrete, and that the sales totaled $1,000,000,000, with the largest volume of sales in California, New York, Illinois, Texas, Ohio, Michigan, and Pennsylvania in that order, with annual sales of $40,000,000 or more.

Accompanying, and in a sense overlapping the manufacturing function is that of transportation. The requirements are exacting. The concrete must reach the job when and at the rate specified by the customer, it must be in proper physical condition for his work, and it must be delivered in a manner most convenient for him to rehandle into final position. The transporting unit is, of course, the modern motor truck, which is itself a highly developed mechanism. The carrying bodies have gone through a steady process of improvement from year to year until currently the pear-shaped, high-discharge drum with open rear end is the type most widely employed.

From the standpoint of the ready-mix producer, the necessary truck equipment represents the largest item of investment, usually several times that of the plant; it also requires more personnel than the plant operation, and it likewise involves more attention to maintain. In short, the transportation end of the business is of grave importance, and the success of the entire operation depends upon its functioning efficiently.

If the concrete mixing and the production of the necessary aggregates are handled by the same organization, the concrete and the raw material branches can appreciate each other's problems. In that case the functions of manufacturing and extracting are interrelated. But if the aggregate and concrete are separate

businesses, the concrete producer is still deeply interested in aggregate production because the quality and cost of the concrete will depend to a marked degree upon the service in aggregates of the sister industry. Service in this instance does not mean merely the reliability of shipments, but further the quality of the aggregates themselves, as to cleanliness, soundness, and uniformity of grading.

As the increase in value of materials contributed by the mixing operation is relatively small, the ready-mix business reflects many of the features of the jobber or materials dealer. In fact, in addition to delivering concrete ingredients in either dry or wet (mixed) form when required, a ready-mix business frequently handles a wide range of other materials for the builder, such as lime, plaster, mesh, expansion joint, reinforcing steel, and many other accessories, all in competition with dealers who do not furnish ready-mix. This paralleling of services has apparently led many established materials dealers to enter the ready-mix field, sometimes reluctantly, even when bins and yard facilities are available, due to the additional investment in trucks and mixer bodies.

But there is one important difference between furnishing mixed concrete and merely handling the ingredient materials; that difference is the matter of responsibility. The ready-mix producer is accountable to his customers for the quality and service of the concrete, whereas a dealer jobbing another company's products is not accountable.

Some dealers who had previously thought of ready-mix as merely a different method of serving their trade with cement and aggregates have been surprised after entering the concrete field to realize both the technical requirements of handling concrete, as compared to jobbing the ingredients, and further the responsibility involved in serving concrete to the customer's satisfaction. Unfortunately some dealer-producers, even after facing the complexities of furnishing concrete, have failed to acquire for themselves or to introduce into their organizations adequate technical understanding of concrete to serve their trade properly. As was stated recently by E. J. Nunan, long associated with ready-mix at Buffalo, "The producer himself should be his toughest inspector."

Another important facet of a ready-mix business is merchandising. When ready-mix concrete was something of an innovation in construction, contracts with prospects had to emphasize: (1) that concrete could be hauled for an hour or even longer without loss of quality and usually with improvement; (2) that the concreting operation at the job would usually be speeded up by receiving concrete ready-to-place because deliveries could be made faster than job-mixing; and (3) that the overall cost to the consumer would not be increased but usually decreased.

These three features are now generally accepted by the contracting fraternity, even to the extent that in most urban communities today some 80 to 90 percent of concrete work other than paving slabs is being served with ready-mix. But the growing acceptance by the public of the ready-mix idea has naturally brought a large increase in the number of operating companies, until today there is keen competition among producers in most sizable communities. There has always been competition between ready-mix service and the customer's own job-mixing; this has automatically limited the level of prices. Consequently, with a floor of costs of materials and operation,

the ANDREWS TUBULAR SCREW CONVEYOR

In Portable or Permanent Models

can "TAKE IT" and "DELIVER"

Because It's Designed and Manufactured For Heavy Duty Service

Yes, it takes The ANDREWS Tubular Screw Conveyor to get fast, efficient, continuous movement of:

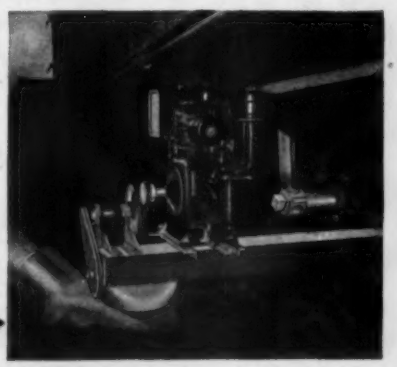
CEMENT
GYPSUM
PULVERIZED LIMESTONE
AGGREGATES
CALCIUM CARBONATE
PHOSPHATE
ASPHALT FILLER
ROOFING GRANULES

The ANDREWS Portable Conveyor has the versatile abilities to handle a large variety of free flowing uniform granular materials. Also available in permanent models without wheels. With the P-51 attachment (see below, right) its scope is virtually unlimited.

ANDREWS P-51

Portable Overtrack Conveyor

Teams with the ANDREWS Portable and Permanent Tubular Conveyor to perform double-duty at Cement, Ready Mix, Concrete Block and similar plants unloading covered hopper cars. No pit has to be dug under the track with the ANDREWS P-51 eliminating the usual water hazard. A railroad car can be spotted at any point and unloaded at a moments notice.



The P-51 is shown feeding into an ANDREWS Portable Tubular Screw Conveyor.

WRITE NOW! / For Full Details, Specifications, and All Facts on All Models

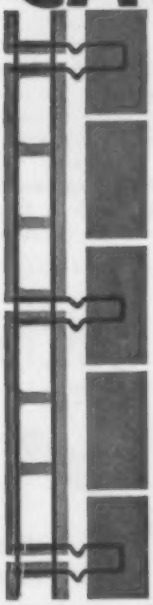
ANDREWS

ANDREWS MACHINE COMPANY

359 E. Main Street Decatur, Illinois

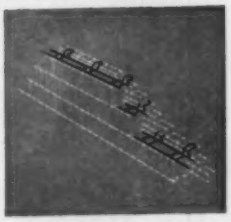
Phone: Decatur 8-4363

CAVITY WALL data sheet



NEW!.. *ECONO* CAVITY-LOK...*

This all flush welded masonry reinforcing relieves horizontal stresses in the back-up wall and ties it firmly to the exterior wall in one operation! Adds lateral strength. Minimizes mortar shrinkage and settlement cracks. Moisture drip U-BAR on 16" centers prevents moisture conduction. Available in 12' lengths of all 3/16" wire. (9 U-BARS per 12' pc.)

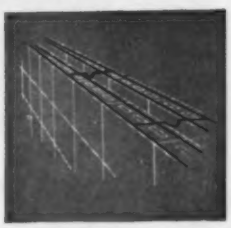


Bundles of 15 pieces

All products available in following finishes: Brite basic siderods and galvanized cross ties. All mill galvanized wire galvanized after fabrication.

CAVITY-LOK *SENIOR*..*

A combination of four lateral heavy steel rods, joined by flush welded cross bars with a positive action moisture drip. With CAVITY-LOK Senior you get the strength of two reinforced masonry walls in one. Available in 10' lengths with cavity ties on 16" centers. All 3/16" wire. (8 ties per 10' pc.) Get all the facts on CAVITY-LOK Senior today!



Bundles of 10 pieces

Available finishes same as above.

FAMOUS FLUSH WELD

Proven strongest by comparison

AA WIRE PRODUCTS COMPANY

7211 Cottage Grove Ave., Chicago 19, Ill. Phone RAdcliffe 3-8313

☐ Send me your New Blok-Lok & Concrete Block Wall Calculator FREE!

☐ Send me your AIA Catalog $\left(\frac{2c}{Aa}\right)$

I am an ( ) architect ( ) mason contractor ( ) dealer

NAME _____

ADDRESS _____

Free

*Patent Pending

Copyright 1956 AA Wire Products

the available margin may be discouragingly small.

However, there are numerous elements aside from quoted prices which may influence success in merchandising concrete. One continuing problem is the treatment of "holding time," whether to bill for excessive delays to trucks at the job, or to endeavor to minimize such delays through frequent visits to the job by supervisors. The use of 2-way radio between the dispatcher at the plant and the trucks has aided many companies to reduce the idle time due to delays. Another problem is that of applying a surcharge for heated concrete during the cold weather period; this may be simplified if all competitors in a marketing area adopt uniform dates between which the extra charge will be assessed and then adhere to their announced policy.

Among other matters which deserve special consideration are policies regarding admixes, air entrainment, the amount of testing service to be furnished, and escalator provisions as to price. The insistence by the producer of obtaining signed agreements for important jobs, instead of depending on verbal understandings, has been found to be sound practice. In fact, the National Ready Mixed Concrete Association has prepared a booklet entitled *Standard Clauses for Sales Agreements*, which contains suitable texts for various provisions which should be covered in a sales contract for concrete. This booklet, based on the experience of a large number of successful producers, has been a valuable contribution.

The importance of merchandising in a ready-mix business is reflected by the practice of the N.R.M.C.A. for a number of years in devoting a full session at the annual convention to discussing such problems in connection with sales as have been mentioned.

The large attendance and keen interest in this session year after year has indicated the desire of members of the industry to be informed regarding successful practices in merchandising concrete.

Altogether, it can be said that the ready-mixed concrete business is not the simple operation of an alternate method of delivering cement and aggregates for the convenience of the customer. A satisfactory ready-mix operation must include adequate provision for the respective functions of manufacturing, trucking, merchandising, and acceptance of responsibility for the quality and service of the concrete furnished.

all mobile radio users need this dependable receiver

for silent monitoring of Civil Defense alerts!

RCA Conelrad Receiver $115* complete and ready to use

Rules and regulations of the FCC require every station in the Amateur, Standard Broadcasting, Public Safety, Special Industrial and Land Transportation Radio Services to observe all Conelrad radio alerts.

In buying equipment for Civil Defense monitoring purposes, you will want to have the most foolproof equipment. RCA's Type CR-17A Conelrad Receiver offers the following noteworthy features:

1. *Silent*, annoyance-free monitoring plus provision for audible monitoring and external alarm.
2. Automatic switching to preset Conelrad frequency in event of an alert.
3. In absence of radio signal, automatic switching between broadcast station and Conelrad "cluster" stations until signal from one or other is received.
4. Designed for continuous operation.
5. Two tuning sections—Section 1 is tunable to any frequency in broadcast band; Section 2 is preset to Conelrad frequency 640 to 1240 kc.
6. Supersensitive, permanent-magnet electro-dynamic speaker assuring fine performance and volume.
7. Fulfills requirements of Federal Communications Commission.

**Use coupon for ordering or information*

**Price in U.S.A., subject to change without notice.*

RCA

RADIO CORPORATION of AMERICA
COMMUNICATIONS PRODUCTS
CAMDEN, NEW JERSEY

In Canada: RCA VICTOR Company Limited, Montreal

Radio Corporation of America
Communications Products, Dept. L-290
Building 15-1, Camden, N. J.

☐ Please send me_____RCA Type CR-17A 550-1600 MC Conelrad Receivers @ *$115 ea.
☐ Check enclosed ☐ Bill Company
We absorb shipping charges within Continental U.S.A. on all prepaid Conelrad Receiver orders.
☐ Send me complete information.

NAME_____TITLE_____
COMPANY_____
ADDRESS_____
CITY_____ZONE_____STATE_____

The Del Monte Lodge, Pebble Beach, Calif., where the directors of N.R.M.C.A. held their annual meeting.

By WALTER E. TRAUFFER

Directors of N.R.M.C.A. Mix Business And Pleasure at Pebble Beach Sessions

Another ON THE SPOT Report

THE boards of directors of the National Ready Mixed Concrete Association and the National Sand and Gravel Association held their semi-annual meetings October 1 to 3, 1956, at the Del Monte Lodge, Pebble Beach, Calif., on the famous Monterey Peninsula. Many important matters of industry and association business, governmental developments, etc., were discussed. No finer location could have been selected from a scenic standpoint, and a wide choice of activities was available for the members and their wives outside meeting hours. The N.S.G.A. board met on Monday, October 1, the N.R.M.C.A. board on Tuesday, and the joint meeting of the two boards was held on Wednesday. The attendance was excellent, and nearly all members brought their wives.

In addition to the usual business reports by members of the staff, officers of the association, and chairmen of committees, the following important subjects were discussed: public relations, stream and air pollution, noise, safety, zoning, joint advertising with P.C.A., coming conventions, group insurance, expanded highway program, retirement plan, cost accounting manual, etc.

The N.R.M.C.A. board meeting was opened by President Robert Mitchell (Consolidated Rock Products Co.), who commented on the record level of business and the bright prospects for the future. The association's membership, he said, is also at a record high. At this meeting only four of the 28 directors and five of the 14 active past presidents were absent. Mr. Mitchell also told of his visits to various state ready-mix association meetings in the Middle West and elsewhere. The ones doing the best job, he said were patterned in a general way after the national association. He emphasized that membership in local associations is important but that membership also in the national group is a necessary supplement.

At the joint meeting of the two boards Vincent P. Ahearn, executive secretary of both associations, gave a brief resume of plans for the coming joint convention to be held in Los Angeles. The same general pro-

Left: Mixed emotions are displayed by Andrew C. Thomas (Jaeger Machine Co.), chairman of the Exhibitors Committee; Stanton Walker, engineering director of both associations; and Ralph H. Anderson (Anderson Concrete Corp.), chairman of the public relations committee.

Right: Joseph A. Bullen (Fountain Sand & Gravel Co.) and Harry F. Thomson, past president, enjoying a chat.

cedure will be followed as in previous non-exhibit years and there will be tours of plants in both industries. The Los Angeles committee will have as co-chairmen N. J. Redmond (Blue Diamond Corp.) and Harry E. Bender (Azusa Rock & Sand Co.), who head southern California's ready mixed concrete and sand and gravel associations, respectively, and Hal G. Feraud, who is executive secretary of both.

At the joint meeting the dates and places for several future conventions and board meetings were also decided upon. The 1957 joint conventions will be at the Hotel Statler, Los Angeles, February 11 to 14. The 1958 joint conventions will be at the Conrad Hilton Hotel in Chicago, February 9 to 13, with exhibits there and at the Coliseum. The 1959 convention will be at the Roosevelt Hotel in New Orleans, February 15 to 19. In 1960 joint conventions and exhibits are tentatively scheduled for the Conrad Hilton and the Coliseum in Chicago, February 15 to 18. The 1961 conventions will go back to the Fairmont Hotel, San Francisco; dates will be February 20 to 23. The 1962 conventions and exhibits are tentatively scheduled for the Conrad Hilton and the Coliseum in Chicago, February 12 to 16, and the 1963 conventions will be in Miami the week of January 12.

The 1957 joint semi-annual meetings of the boards of directors of both associations will be held August 25 to 31 at the Manoir Richelieu, Murray Bay, Quebec. In 1958 these meetings will be held at the Sun Valley Lodge, Sun Valley, Idaho, September 17 to 21. In 1959 they will be at the Lake Placid Club, Lake Placid, N. Y., September 27 to 30. It was also decided for the boards to return to Pebble Beach in 1960 and to go to The Greenbrier, White Sulphur Springs, W. Va., in 1961. Dates in both cases are to be decided on later.

In his report to both associations Vincent P. Ahearn, executive director, urged producers not to take the Robinson-Patman act too lightly. Smaller companies, he said, are in some cases suing larger companies, charging that their prices make it impossible to compete. One company, he said, is being sued for the maximum of $600,000 on this pretext.

According to Mr. Ahearn a group of five certified public accountants from within the industry is working on the cost accounting system for the ready-mix industry, which will be a supplement to the association's *Outline Manual of Cost Accounting for the Ready Mixed Concrete Industry*. This system is expected to be ready for the annual meeting in Los Angeles in February.

At the joint meeting of the two boards reports were given by Andrew C. Thomas (Jaeger Machine Co.), chairman of the Truck Mixer Manufacturers Bureau and C. B. Laird (Eagle Iron Works), chairman of the Manufacturers Division. With respect to the convention and machinery exhibits in Chicago in 1958, they stated that ample space will be available for all exhibitors and some of the undesirable space will be eliminated. At the Coliseum also there will be better lighting and other improvements.

Andrew C. Thomas (Jaeger Machine Co.), chairman of the Exhibitors Division of N.R.M.C.A., told of the formation of this division on May 22, 1956, at a meeting in Chicago. This was done so that cement companies and others who are not manufacturers of machinery could participate in the biennial machinery exhibits and have a voice in these activities. A proposed constitution and bylaws will be submitted at the coming convention in Los Angeles.

A progress report for the Committee on Public Relations was given by Chairman Ralph H. Anderson (Anderson Concrete Corp.). He commented first on the excellent returns from a questionnaire on public relations problems recently sent to the membership. Partial returns show that the percentage of plants subject to zoning is 69 percent for those located in rural areas, 90 percent in suburban-residential areas, 89 percent of those in urban-residential areas, 69 percent of those in commercial areas, 79 percent in semi-industrial areas, and 93 percent of those located in industrial areas.

Of the plants subject to zoning regulations, about 82 percent are classified as conforming uses, and the others are allowed to continue in operation as pre-existing, non-conforming uses. Mr. Anderson pointed out that more than half of the plants zoned in suburban-residential areas are non-conforming uses, but only 8 percent of those zoned in rural locations and 11 percent of those in urban-residential areas are non-conforming. The fact that zoning requirements differ widely throughout the country is demonstrated by the fact that about 16 percent of the plants in commercial zones, 15 percent of those in semi-industrial zones, and 6 percent of those in industrial zones are also non-conforming uses.

According to Mr. Anderson, of the plants subject to zoning ordinances 86 percent are under ordinances administered by local municipalities and 14 percent on the county level. About 16 percent of the plants under zoning ordinances have had zoning hearings, all of them subsequent to 1946, and most of them since 1953. At these hearings opposition was expressed, in the order of frequency, on the following basis:

(1) dust and dirt, (2) truck traffic, (3) noise, (4) operation in a residential area, and (5) appearance of the plant.

Of the total number of plants in this preliminary tabulation 10 percent have been restricted in their operations by zoning ordinances, the most common restrictions being on

Discuss public relations, noise, safety, stream and air pollution, zoning, advertising, insurance, road program, retirement

Robert Mitchell (Consolidated Rock Products Co.), president of N.R.M.C.A.

the use of streets by ready-mix trucks, on hours of operation, and in relation to enclosures. Of these plants 7 percent are subject to air pollution laws, and half of these have found compliance difficult. Another 6 percent expect enactment of such laws in the future.

The most common method of disposing of wash water, according to Mr. Anderson, is by dumping it in a private pit or dump, and this is done by 32 percent of the reporting plants. Some form of settling tank or seepage pit is used by 31 percent, and 17 percent follow such potentially offensive practices as dumping the water into rivers, creeks, or other public bodies of water, or by putting it into the sewer system without first eliminating the solids. Only 9 percent of the plants reporting had encountered any problems in relation to disposal of wash water, and half of these traced the cause of their problem to inadequate elimination of solids.

About 34 percent of the plants use left-over concrete for yard paving or plant improvement, 25 percent dump it in some private dumping area, 19 percent use it as fill or grading material, and 13 percent make concrete blocks and other products from their left-over concrete. About 6 percent donate this concrete to local individuals or groups, or give it to their drivers.

Dust and dirt was the most frequent basis for complaints in 16 percent of the plant returns analyzed, noise for 12 percent, and appearance of the plant for 3 percent. The ready-mix trucks of 56 percent of these plants had been restricted in the use of the streets in one way or another. About 28 percent had received serious complaints about spillage and dirt from trucks, and 12 percent from noise made by the trucks. About 16 percent had received complaints about excessive speed of trucks. The source of the above complaints about trucks were about evenly divided between plant area and job sites.

In closing, Mr. Anderson emphasized the fact that only 46 percent of the plants analyzed had any program to enlist the good will of their community. In fact, 36 percent did not have a safe-driving program, and only 29 percent have made any effort to develop good relations with the local press. Of these plants 25 percent reported that they belonged to no organizations of a civic, community, fraternal, charitable, or business nature on a local level. Mr. Anderson emphasized the growing threat of zoning to the industry and urged the association and all individual producers to work together on this problem. In his own organization good employee relations is the first objective, then safety and public relations.

At the later joint meeting the ready-mix board voted to appropriate $10,000 to carry on the association's public relations program.

A feature of the joint session was the presentation on the Federal Aid Highway Act of 1956 by Ezra C. Knowlton (Utah Sand & Gravel Products Corp.). After briefly reviewing the history of this act and the features of the program, Mr. Knowlton pointed out that this 41,000-mile network of roads hits most state capitals and big cities, and that it is without traffic lights. He showed on a map the chaos which would have resulted in a few more years of haphazard independent toll road and freeway construction. Our Congress has, in his opinion, earned our gratitude for its prompt action in the face of many and serious obstacles in putting an end to the haphazard development of our highways.

Mr. Knowlton urged that everyone watch carefully locally and nationally to see that these highway plans are carried out as intended and are not emasculated for the benefit of special interests. Moreover, we must not lose sight of the fact that implementation of this program lies with the individual state highway departments. Many of these departments are understaffed and lack necessary facilities, Mr. Knowlton declared, and he urged that members of this industry take an active interest in the progress in their areas. In closing, Mr. Knowlton said, "This is a golden dream coming true—let's keep it out of the dust."

A progress report on the N.R.M.C.A.-P.C.A. program for promoting the use of ready-mixed concrete in highway and street construction was given by George H. Paris, assistant to the vice-president of promotion of the Portland Cement Association. In the first test program made in St. Paul, Minn., newspaper advertising, cost studies, circulars, etc., were used. At Akron, Ohio, a different procedure was used. City officials were first contacted, and advertising followed. It developed that public officials were more impressed by the direct appeal of local businessmen (r.m.c.) than of a national association. Other programs at Nashville, Tenn., and Spokane, Wash., are just starting. More information on this program will be available at the annual convention.

In his report as engineering director Stanton Walker said that the cement testing program will involve 7,000 strength tests. Every week cements from five different sources are properly sampled, shipped, and then tested along with a sixth cement, which is a laboratory sample. He pointed out that many cement companies feel that they have a seasonal strength program, but that preliminary results suggest that final results will not correlate well with the seasons.

In discussing future laboratory plans, Mr. Walker mentioned continuation of flexural strength studies, test specimen size in relation to maximum size of aggregate, testing of all new admixtures brought to their attention, participation in the C-1 testing program, etc. He also mentioned the greatly increased production of portland-slag cements by companies having blast furnace slag available. The strength requirements of these cements are the same as for Type I, but they are more sensitive to curing conditions. He warned against indiscriminate substitution of these cements for Type I. In closing, Mr. Walker said that it is planned to test all portland-slag cements.

The Maryland Joint Highway Research Project was described by Mr. Walker, along with the work done along the same lines by Kentucky, Virginia, Tennessee, and other states. He also told of the difficulty of getting graduate fellows for the associations' program, largely because of the high pay engineers can now get on graduation.

It was announced that the associations' 11th annual short course will be held the last week in November. Mr. Walker pointed out that this course encourages the formation of similar courses in many areas.

In connection with the associations' group insurance plan, it was reported that the teamsters union in Boston had approved of its members in that area coming under the plan, with the result that there are now 200 more men under the plan, and the ready-mix association has three new member companies.

There was considerable discussion of a proposal that the associations sponsor a retirement plan for employees and officials of member companies. It was pointed out that the associations already have full information on the plans now in force among member companies. The board will appoint a joint committee to study this proposal.

Columbia Model 8 MACHINE MAINTENANCE

1/10 OF A CENT PER BLOCK!

Writes Warren C. Larson
of Larson Cement Stone Company,
Omaha, Nebraska.*

From left to right: Warren C. Larson, partner, Morton Gilpin, plant foreman, and Clifford L. Larson, partner.

Mr. Larson further states:

"Since installing our Columbia Model 8 we have manufactured over 1,600,000 equivalent units in all various shapes and sizes. Our *machine maintenance* cost has amounted to approximately *1/10 of a cent per block.* Figuring overall . . . our total machine and mold replacement parts costs have amounted to *1/4th of a cent per block.*

"Couple this with the fact that we are producing a block which has the very best of customer acceptance in a city where from 7 to 8 million blocks are sold every year . . . and you can see why we are very happy to be on the Columbia team."

Mr. Larson's comments are typical of those received from hundreds of block manufacturers who have found that Columbia Block Machines and equipment mean *greater production* at *less per unit cost* . . . with *proportionately higher profits.*

Columbia Model 8 (2-block) machine is shown in operation at plant of Larson Cement Stone Company, Omaha, Nebraska.

**The complete text of Mr. Larson's letter will be sent on request.*

If you are planning a new plant, a plant expansion or would like to discuss any production problem, write or phone us . . . and we will have a qualified man in your plant within 24 hours. No obligation. Call OXford 4-1501.

Columbia MACHINE

Home Office: 107 S. GRAND, VANCOUVER, WASHINGTON

factory Branch and Warehouse at Mattoon, Illinois.

District Offices in: Wisconsin, Illinois, South Carolina, Mississippi, Florida, New Jersey, Virginia, California, Massachusetts, Texas, Montreal, Toronto, Vancouver, B.C.

New York's Concrete Industry Board

Co-operative organization enters fifth year of useful existence

By JOHN J. MANNING*
Managing Director
The Concrete Industry Board, Inc.

THE Concrete Industry Board, organized to further the production of quality concrete in the Metropolitan New York area, recently held its fifth annual meeting and elected officers and directors for the ensuing year.

The board originated in a small group seeking to improve the quality of concrete being produced in the Metropolitan New York area. This group was activated to overcome the criticisms and complaints of the various agencies using concrete, particularly those employing concrete in sufficient quantities to provide definite inspection and control.

The desirability of the aims and objectives of this group were readily recognized, and membership in the group continued to increase, due to the energetic leadership of Roger H. Corbetta (president, Corbetta Construction Company, New York, N. Y.) and some of his contemporaries.

It was readily seen that ready-mixed concrete, unlike any other materials utilized in modern construction, is actually manufactured at the plant. This industry, therefore, does not have the advantage of controlled manufacturing processes and inspections to which other building items are subject prior to delivery at the building site. Plumbing fixtures, electric fixtures, and heating units all come to the building site as a finished manufactured product, having passed all necessary tests and requirements. Not so concrete.

True, in most instances in the Metropolitan New York area concrete comes to the site ready-mixed; however, its transformation from a plastic to a solid material in a finished structure takes place at the structure, and its final condition as to meeting all specification requirements is not finally known until it completes its final hardening some time after its final placement in the structure.

It was very obvious to this group that the owner or the purchaser was interested only in the final quality of the concrete in the finished structure; and if the quality of the concrete in the structure was below the quality which he had purchased, it made little difference to him in what stage of its production some one failed to do his job properly.

It is little consolation to the owner of a new building to tell him that the design was inadequate, or the mix specified was incorrect, or the aggregates were not properly graded, or the amount of cement was deficient, or too much water was used in the placement or handling of the concrete. He only knows that he has received an inferior material, and he very properly criticizes and condemns concrete in general. He did not pick out the cement manufacturer, the gravel producer, the ready-mix man, the general contractor, or subcontractor. He condemns concrete in all its aspects. Even if his building is unsatisfactory because of poor form work, he never attributes the blame to carpentry. It is just another concrete failure.

Just as the manufacturer of a piece of equipment sees to it that each of the component parts which go to make up his unit is in itself adequate and satisfactory, so also must the person selling concrete as a construction material satisfy himself that each of the component parts going into the production of his concrete is satisfactory in all respects.

It is obvious, therefore, that an organization undertaking the improvement in the quality of concrete being produced must see to it that this quality is maintained in each and every step of the operation from inception to completion. It is obvious that no one group can undertake the production of concrete in its entirety; and inasmuch as the production of the various components which make up concrete and the design of the concrete elements, both as to concrete mix and finished structure, is the work of specialists, the end result desired can be obtained only by a true harmonizing of all these specialists into a co-operative group.

Members of the Concrete Industry Board quickly realized that the organization must comprise every representative of the industry. Consequently, the organization, which has now grown to 101 corporate and 114 individual memberships, includes engineers, architects, cement producers, aggregate producers, ready-mix operators, reinforcing steel manufacturers, testing laboratories, contractors, and concrete subcontractors. It is sponsored by the Cement League of the New York Building Trades Employers Association, and includes official representation from the American Concrete Institute, the A.S.C.E., the American Institute of Architects, and related organizations.

The spirit permeating C.I.B. is one of co-operation. Each member of the group recognizes that the success of the entire undertaking is no

(*Continued on page* 260)

*Vice Admiral C.E.C. U. S. Navy (Ret.)

L.P.G. as a Fuel For Fork Trucks

By **RUSSELL HASTINGS**
Chief Engineer, Industrial Truck Div.
Clark Equipment Company

characteristics
advantages
safety
conversion
operating costs

THE advantages claimed for liquefied petroleum gas as a fuel for industrial fork lift trucks have focused a great deal of attention on this subject in recent months. But while the number of L.P.G. users is growing steadily, an even larger number of men concerned with materials handling have considered the use of L.P.G. but are deferring decisions regarding it because of inadequate information or a lack of understanding as to how the advantages of L.P.G. can be applied to their specific handling problems.

What Is L.P.G.? Liquefied petroleum gas is gas kept in a liquid state by pressure. L.P.G. can be either propane or butane, but is usually a mixture of the two. Its chief source is natural gas, from which L.P.G. is condensed out as a by-product. Large quantities are also produced by oil refineries as a by-product of gasoline production; and additional amounts, previously burned off as waste, are now being realized from crude oil wells. L.P.G. is measured in pounds; 4.46 lb. equal one gallon of gasoline.

Characteristics L.P.G. has certain characteristics which distinguish it from gasoline:

1. Propane boils at minus 44 deg. F., while butane boils at 32 deg. F. (It is because of this decided difference in vaporization temperatures that the two gases are usually mixed. Butane alone, for example, would not be effective in sub-freezing temperatures.)

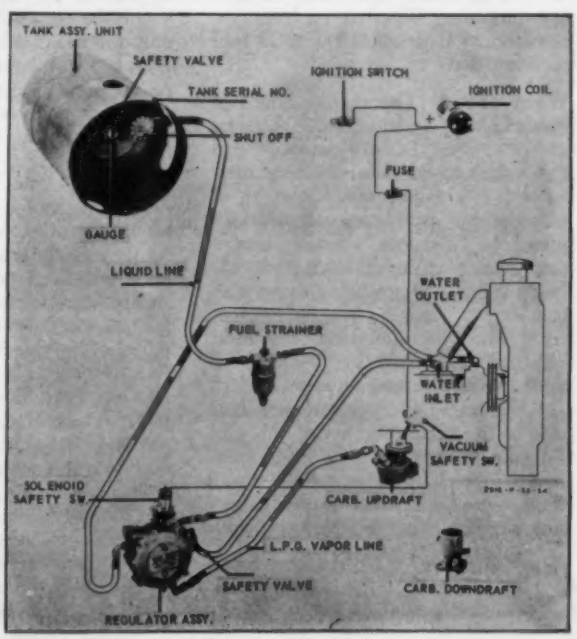
2. At 100 deg. F., propane develops 172 lb. pressure, while butane develops 38 lb. pressure.

3. Octane rating of propane is 100; that of butane is 93.

These characteristics require slightly different construction for engines using L.P.G., when compared with gasoline engines. Due to the higher octane rating of L.P.G., a higher compression ratio—from 8 to 1 to 9 to 1—is used to obtain fuel economy.

A cold in-take manifold is used with L.P.G. since the fuel is a gas when it enters the manifold and does not need a hot spot to help vaporization—as is required when gasoline is the fuel. A simple air-gas carburetor replaces the complicated, delicate gasoline carburetor.

Since L.P.G. is a liquid only when under pressure, a fuel tank capable of withstanding high pressure is necessary. Clark's L.P.G. fuel tanks, for example, are designed for working pressures of 240 p.s.i. with test pressures of 480 p.s.i. A relief valve is incorporated to by-pass and vent pressure exceeding 375 p.s.i.



The simple fuel system of a fork truck engine powered by liquefied gas. Main components are the high pressure tank, the vaporizer-regulator, and the downdraft carburetor.

Advantages of L.P.G. Longer engine life resulting from use of L.P.G. is probably the principal advantage of this fuel. Operating characteristics of L.P.G. reduce engine wear, when compared with gasoline operation, and thus effect lower engine maintenance costs. This is accomplished as follows:

1. L.P.G. enters the combustion chamber as a gas rather than as a vaporized liquid, thus insuring almost complete burning. Unburned carbon deposits, commonly found with gasoline, are virtually eliminated.

2. L.P.G.'s high octane rating allows clean burning, thereby eliminating lead compound deposits in the combustion chamber. L.P.G. is completely free of materials causing varnish deposits.

3. Since L.P.G. is a dry gas, there is no liquid to wash down the cylinder wall lubricant. Crankcase dilution is virtually eliminated. This results in less wear on cylinder walls and bearings and longer life for lubricating oils.

4. The simple carburetor has no jets or other mechanisms that require the maintenance and adjustments usually necessary with a gasoline carburetor.

5. The fuel pump is eliminated because L.P.G. is under its own pressure in the tank.

In most installations lower fuel costs are realized with L.P.G., but this largely depends on geographic location. Generally speaking, L.P.G. costs less than gasoline in the Western, Mid-western, North-central and Gulf states. In the North-eastern states, it is usually more expensive. In the former areas lower fuel costs will reflect especially substantial savings in fleet installations, where fuel costs make up a large portion of the total operating cost.

Buying L.P.G. in bulk rather than in individual tanks increases savings in the cost of fuel, but necessitates the purchase and installation of storage facilities. Whether such action is economical depends on total fuel consumption.

What about Fumes? The small amount of toxicity produced by L.P.G. combustion (as colorless, odorless, and harmless fumes) is a factor which can be of considerable importance in certain instances. Because of the almost complete burning of the fuel, exhaust fumes are produced to a much less extent than with gasoline engines. Carbon monoxide, the most harmful ingredient in gasoline engine exhaust fumes, is contained in L.P.G. fumes in only minute amounts due to the high volatility of this gas. For the same reason, odorous aldehydes—which give gasoline fumes their obnoxious smell—are virtually nonexistent in L.P.G. fumes.

Is L.P.G. Safe? There has been considerable misunderstanding concerning the safety of using liquefied petroleum gas. Its characteristic high volatility and the fact that it must be kept under high pressure have occasioned some misgivings about the possibility of explosions and other accidents. In some cases these doubts have been strong enough to decide against use of L.P.G.

There is an "accident potential" in any fuel, L.P.G. not excepted. But experience has proven beyond question that there is no more danger in use of L.P.G. than there is with gasoline, or even with diesel fuel, when normal safeguards and good maintenance procedures are utilized.

Well-engineered components are essential for safety. Fuel containers must comply with local regulations concerning the use of L.P.G. The tank should be equipped with a safety-relief valve which by-passes excess pressure, and it is mandatory to have on the tank an excess flow valve which automatically shuts off the flow of gas if the rate is too fast; this might occur if a coupling or a hose is broken. Fuel systems should be completely sealed to eliminate fuel leakage or evaporation. Quick-disconnect, self-sealing couplers are important in that they help prevent gas leakage during tank changeovers.

Since L.P.G. is an odorless gas, manufacturers add an odorant to aid in the detection of gas leaks. Often this odor is noted in the exhaust fumes but ignored because it is considered natural. This is a mistake. Odorous exhaust fumes indicate that the odorant is not being burned completely, probably because the fuel mixture is too rich. This condition should be corrected immediately, not only for more efficient engine operation, but also because the fume odor might prevent detection of a similar odor at a point where there is a gas leak from the tank or the hose couplings.

While a gas leak is potentially dangerous, it by no means indicates an imminent explosion. To illustrate, let us assume that a tank valve has been damaged, resulting in a slow, steady leakage of gas. Ordinarily the leak would be detected either by the odor or by the sound made by the escaping gas. In this case the leak has not been noticed, and an open flame is accidently directed to the gas flow.

The result would be not an explosion but a tongue of flame extending out from the valve, much like an acetylene torch. The length of the flame would depend on the pressure behind the gas leak. While the flame itself might cause damage or injury, there would be no explosion damage.

Such a leak might result in an explosion if the leak were undetected long enough for a sizable amount of gas to collect in a closed, unventilated area, such as the bottom of an elevator shaft, before being ignited. While such a situation is possible, it is highly improbable if the L.P.G. equipment being used is well constructed and in good repair.

Some gas usually escapes when fuel tanks are changed, but even this harmless amount can be reduced or eliminated if proper techniques are used. The shut-off valve on the tank should be completely closed during this operation. After the valve is shut, the fork truck engine should be run till it stops, thus using all the fuel remaining in the fuel system. This relieves the pressure on connecting hoses leading from the tank to the metering device. If this procedure is followed correctly, there will be no "phfft" of escaping gas when the tank is removed.[1]

Most communities have local ordinances governing the use of L.P.G., and the first-time user of this fuel should consult these rulings to make sure his operation is within regulations. Usually these codes demand that L.P.G. be stored in an open area away from general plant activity—a restriction often placed on fuels or other flammable materials.[2]

Factory-Built or Conversion Some fork truck owners may not know that it is not necessary to purchase a machine factory-built for L.P.G. operation to gain the advantages of this fuel. Most fork trucks now using gasoline can be converted to L.P.G. operation at a reasonable cost. While some owners have purchased kits to make conversions in their own shops, most prefer that the work be handled by the fork truck dealer because of the complexity of the job. Owners of large fleets of fork trucks planning conversion to L.P.G. will find it advantageous to have their own mechanics learn how to make conversions.

Successful conversion depends on good workmanship and quality parts, and the fork truck owner will be wise to insist on these requisites. Minimum conversions or short kit "spud-ins" not widely recognized or ap-

[1]Two types of quick-disconnect couplers recently developed eliminate the need for running the engine overtime.

[2]For more information about codes governing storage of L.P.G. refer to the National Fire Protection Association pamphlets #58 and #59, and A.S.M.E. Boiler Construction Code, Section VIII. Also see I.C.C. regulations.

GOFF KIRBY READY MIX COMPANY DISPATCHES TRUCKS BY RADIO, SAVES MONEY ON HAULING

Cleveland, Ohio Firm Operates 70 Trucks From Four Plants—Finds General Electric 2-Way Radio Helps Keep Costs Down!

Goff Kirby is one of Ohio's largest ready mix concrete firms. Its rolling stock is a familiar sight on construction projects throughout the Cleveland area. Last year, Goff Kirby Ready Mix Company was the only outside concrete supplier to deliver ready mix to the Ohio Turnpike project.

32 Trucks Have G-E Radio!

Nearly half the company's fleet is G-E radio equipped. These drivers are in constant contact with each of the four GK plants. Dispatch orders, changes, and special instructions by radio help make sure that loads get to a job on schedule. When breakdowns occur, the GK repair vehicle is on the scene in record time.

Radio Helps Keep Hauling Costs Down!

Edwin Harper, Goff Kirby president, reports that most of the cost of concrete is in the hauling charges. Typical rental of a concrete truck in his city is $11.50 per hour. By eliminating truck waiting time and driver overtime you save money. General Electric 2-way radio helps keep these costs down.

2-WAY MOBILE RADIO

Radio Can Help Your Operation, Too!

Goff Kirby is a typical example of progressive management in the concrete business. Your G-E Communications Counselor can tell you of others, show you how G-E Progress Line Radio can save you money. Call him in, or, write: *General Electric Company, Communication Equipment, Section X51116, Electronics Park, Syracuse, New York.*

Progress Is Our Most Important Product

GENERAL ELECTRIC

proved should be avoided. All components used in conversion should have Underwriters' Laboratories approval in order to obtain reasonable insurance rates. (When converting fork trucks to L.P.G., it is wise to inform the fire insurance company to make sure that the use of L.P.G. does not alter insurance rates.)

Conversions of fork trucks to L.P.G. should be made only on engines in top-notch shape. It is especially important that pistons, rings, valves, and cylinder head are clean and free of carbon deposits. Gasoline, which causes carbon deposits, also acts as a solvent in keeping the deposits from becoming highly abrasive. L.P.G. does not have this solvent effect, but tends to harden the residual carbon into a very abrasive substance. Therefore a good overhaul, or at least a thorough cleaning, is a necessary preparation for a proper conversion. For this reason a conversion usually will be done most economically at a time when the fork truck is normally due for an overhaul.

Since L.P.G., because of its high flame temperature, has a tendency to burn conventional valves, it is advisable to install stellite-faced valves and seats and positive valve rotators in the converted engine.

Where Can L.P.G. Be Used? A common misconception concerning use of L.P.G.-powered fork trucks is that they are applicable only in very specific or specialized situations, in which gasoline or electric-powered trucks are not practicable for some reason. The truth is that today L.P.G. is being used as a fuel in all industries employing fork trucks.

The fumeless characteristics of L.P.G., of course, make it an especially valuable fuel in certain industries. Its combined advantages make it a fork truck fuel that can be utilized in any installation.

For example, the Douglas Aircraft Company, Santa Monica, Calif., recently published the results of a test made to determine the comparative advantages of propane and gasoline as fuels for fork lift trucks and towing tractors used in the plant. Using four Clark towing tractors and two fork trucks as a test group, the company operated half the machines on L.P.G. and half on gasoline for five months, carefully noting such factors as fuel consumption and maintenance costs. Results of the test are shown in the accompanying table. Douglas projected the savings on an annual basis covering all of its 103 handling units and estimated that a fleet-wide switch to L.P.G. would save $9,560.

Douglas Aircraft Co. Test Results

	Industrial Tugs		Fork-Lift Trucks	
Per Engine Hour	**Propane**	**Gasoline**	**Propane**	**Gasoline**
Gallons of fuel	0.471	0.485	1.046	0.776
Fuel cost	$0.333	$0.086	$0.073	$0.138
Fuel and combustion system maintenance cost	$0.007	$0.015	$0.010	$0.030
Total cost	$0.040	$0.101	$0.083	$0.168
Saving	$0.061	...	$0.085	...

N.Y. Concrete Board

(*From page* 256)

greater than the thoroughness and accuracy and completeness with which he performs his particular function.

Considering that the Concrete Industry Board is composed of individuals who recognize that their individual success is dependent upon the success of the group, and the failure on the part of any one in the group may mean a breakdown of the entire group, it is felt that they have recognized and accepted the only practical approach to the settlement of their problem. The recognition of this fact and the bonding together of the various groups which make up the concrete industry is in itself an accomplishment of great moment.

During the early years of the organization the intermingling of the group at luncheon meetings did much to encourage and build up the spirit of the C.I.B. and to confirm in the minds of members the desirability and the necessity of harmonious co-operation. The continued growth of C.I.B. and the strengthening of this co-operative spirit assures its continuance.

It is obvious, of course, that the beneficial results of the existence of such an organization cannot be measured in pounds or yards or dollars, nor in the accomplishment of physical structures. The results are at best intangible, but there are many indications that a decided improvement over the conditions prevalent at the inception of the C.I.B. have materially improved. Better relationships between the various components of the industry definitely exist. There has been a decline in the frequency and number of unsatisfactory test cylinders. There is a greater willingness to discuss and settle difficulties when they occur, instead of individuals taking a "dog in the manger" attitude toward other component groups.

The stature and reputation of the Concrete Industry Board has continued to grow through the five years of its organization. At present C.I.B. is incorporated under the laws of the State of New York as a non-profit organization. It has established offices at 220 East 42nd Street, New York City, with a permanent managing director. The board does not maintain a technical staff. Its present employed force consists of a managing director and a secretary.

The work of the board is done through committees, each composed of a chairman and a varying number of members, depending upon the particular work of the group. Actively carrying on the work of the board are the following committees: finance, membership, building code, ready-mix, testing laboratories, program, grievance, by-laws, form work, and advisory.

The permanent officers of the Concrete Industry Board consist of a president, a vice-president, a secretary, and a treasurer. The directors represent all component groups, as previously outlined.

From five to eight meetings a year are held by the board of directors to carry on business and establish C.I.B. policy programs. Membership meetings are held in the form of luncheons, normally eight to ten times a year, at which guest speakers address the members on pertinent subjects. (One meeting a year is devoted to a field trip.) All sessions are well attended, and full and free discussion of the day's subject usually follows the speaker's address.

The board is interested in all legislation pertaining to the concrete industry. It was an active participant in bringing to a successful conclusion legislation having to do with the design and construction procedures of form work. This legislation was hurriedly instigated after a recent form collapse in a major construction project in the New York area.

Major revisions to the New York City Building Code as it applies to concrete construction is a current project of C.I.B. Another activity is the compiling of standard practices for carrying on tests of concrete and laboratory procedures. Standards are

(*Continued on page* 266)

ONE OF 10

McNAMAR PRODUCTS

ROTARY KILNS
BINS
HOPPERS
HEAT EXCHANGERS
PROCESS PIPING
PROPANE STORAGE TANKS
PRESSURE VESSELS
GAS COMPRESSOR PLANTS
REFINERY TOWERS
TRUCK TANKS
(Propane-Gasoline)
GASOLINE PLANTS

When dealing with the world's largest autoclave manufacturer, you are assured quality workmanship backed by 17 years experience in the field.

Pictured above is one of ten autoclaves purchased by Tex Crete, division of Texas Industries, Inc.

Your future business is insured when you purchase an autoclave unit designed and manufactured by McNamar. Outstanding engineering and prefabricating ability are teamed together to manufacture the finest autoclave unit on the market today.

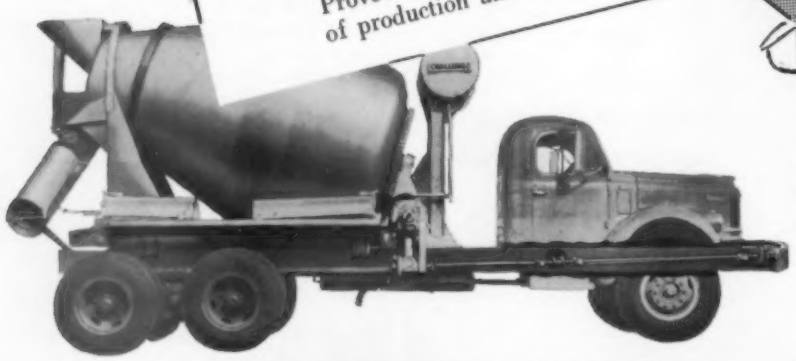
Call, write or wire McNamar for further information.

McNAMAR BOILER & TANK CO.

BOX 868 — TULSA, OKLAHOMA CHerry 2-6291

VOTE
THE STRAIGHT "ETO"* TICKET
...TO GREATER PROFIT

CHALLENGE "Pacemaker" Truck Mixer with *ENGINE-TAKE-OFF DRIVE	X
ELIMINATES MIXER ENGINE Challenge "ETO" Drive principle eliminates the need for a mixer engine by taking the power to operate the mixer at full rated capacity, direct from the front of the truck engine. Power is transmitted to the mixer by a simple, straight, automotive type drive line.	X
OUTSTANDING PERFORMANCE AT LOWEST COST Simple to install, operate and maintain, the "ETO" assures outstanding performance at lowest cost.	X
MORE PAYLOAD AND PROFIT PER UNIT Less weight, plus better distribution of weight for greater payload gives more profit per unit.	X
GREATER ECONOMY Saves up to $450 in fuel alone per mixer annually.	X
PROVED PERFORMANCE Proved economy and dependability by more than 5 years of production and service on operations just like yours.	



IT DOESN'T COST TO BUY QUALITY... IT PAYS!

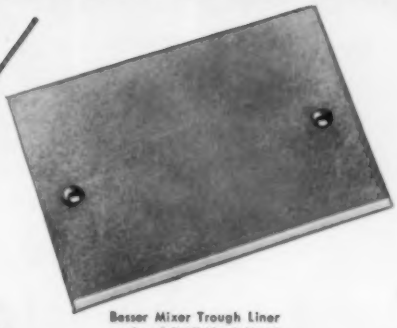
COOK BROS. EQUIPMENT CO.

3334 San Fernando Road, Los Angeles 65, California • CLinton 6-3151

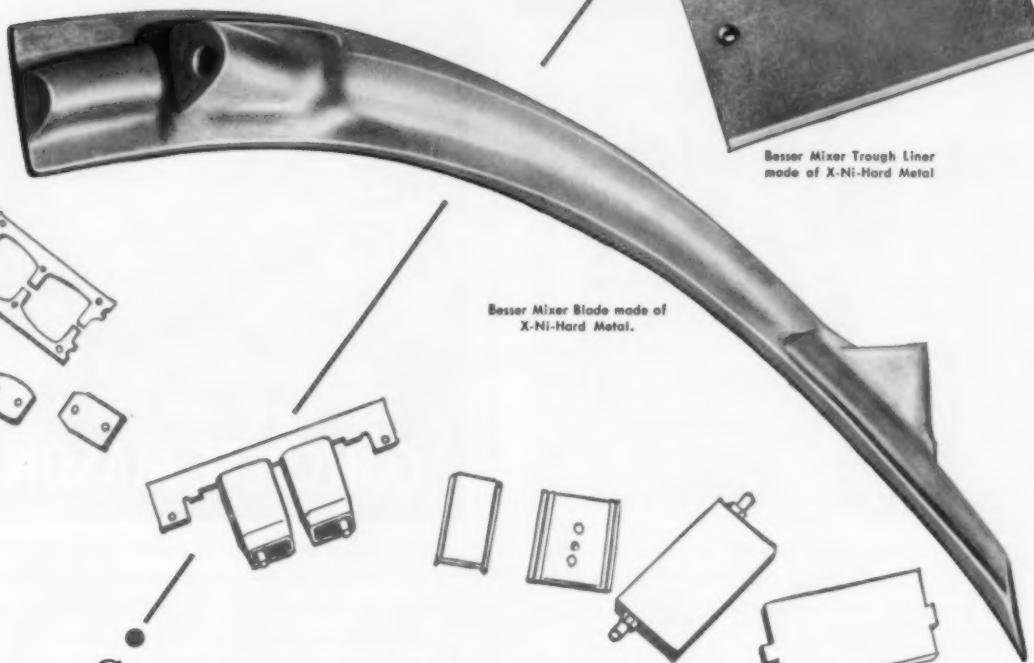
WORLD-WIDE DISTRIBUTORS FOR CHALLENGE TRUCK MIXERS...VALUE STANDARD OF THE INDUSTRY

BESSER Mixer Blades and Liners

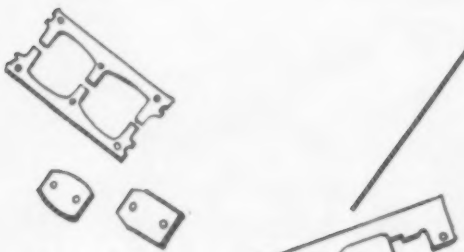
LAST LONGER

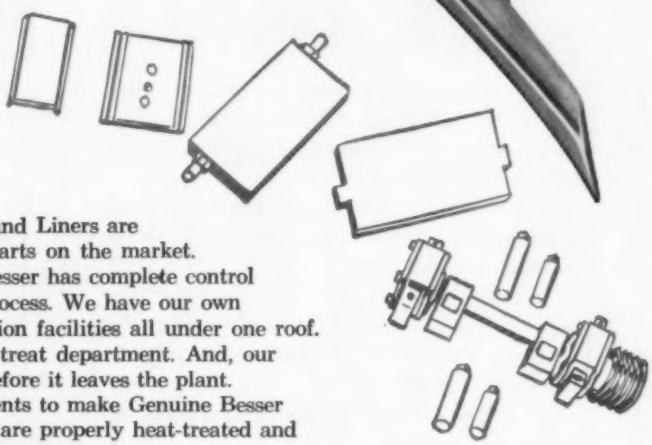


Besser Mixer Trough Liner made of X-Ni-Hard Metal



Besser Mixer Blade made of X-Ni-Hard Metal.





Genuine Besser Mixer Blades and Liners are made to outlast other similar parts on the market. Here are two reasons why. (1) Besser has complete control of the entire manufacturing process. We have our own foundry. We have our own production facilities all under one roof. We have our own modern heat-treat department. And, our inspectors check every part before it leaves the plant. (2) Besser uses the finest ingredients to make Genuine Besser X-Ni-Hard Metal. Castings are properly heat-treated and stress-relieved to give long service.

Always use Genuine Besser X-Ni-Hard Blades and Liners.

Tip to Blockmakers — To accommodate large aggregate, always maintain ½" clearance between liners and blade when replacements are made. With a clearance greater than ½", material accumulates at bottom of mixer, thereby resulting in a poor mix.

BESSER Company

BOX 131, ALPENA, MICHIGAN, U. S. A.

Complete Equipment for Concrete Block Plants

BESSER Genuine PARTS

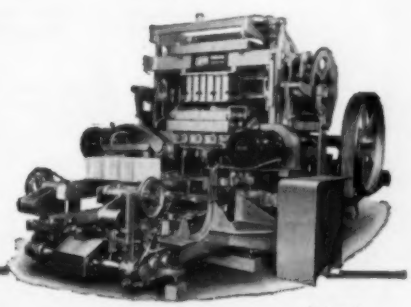
BESSER PARTS STORES

ATLANTA
901 Sycamore
Decatur, Georgia
Phone:
DEarborn 5781 & 5782

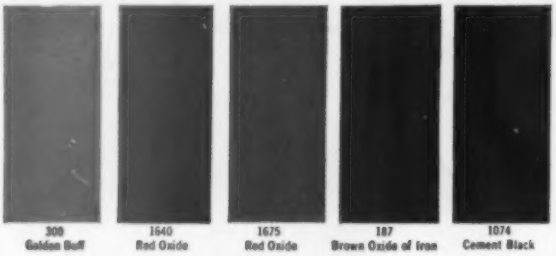
BUFFALO
116 Michigan Avenue
Buffalo, New York
Phone:
MOhawk 3990 & 6019

LOS ANGELES
15026 Oxnard Street
Van Nuys, California
Phone: STate 5-5457

NEWARK
140 Delancy Street
Newark, New Jersey
Phone: Mitchell 2-1434



A 6-104



A guide for choosing concrete colors

For producers of split blocks, patio blocks, concrete blocks and other colored concrete products.

Manufacturers of colored concrete products agree . . . *The pigments they use must have these 3 important qualities:*

1. A high degree of tinting strength when added to the mix
2. Color uniformity year in, year out
3. The ability to incorporate easily

Manufacturers also require a pigments supplier whose technical department is capable and cooperative, whose shipping service is prompt and dependable.

Point for point, REICHARD-COULSTON quality-controlled pigments and dependable service meet *all* these requirements!

The shades shown above are just 5 of the many concrete colors manufactured by REICHARD-COULSTON. Included are yellows, buffs, maroons, grays, reds.

For a free color card, fill in and mail the coupon. Act now.

GENERAL RECOMMENDATIONS: PASTELS (*Split blocks and similar products*), 2-4 lbs. for each bag of cement. DEEP SHADES (*Patio blocks, concrete blocks, etc.*), 6-8 lbs. for each bag of cement.

Reichard-Coulston, Inc.

15 EAST 26th STREET, NEW YORK 10, N. Y.

Warehouses in principal cities; factory: Bethlehem, Pa.
Over a century of manufacturing and service

Natural IRON OXIDE PIGMENTS *Synthetic*

REICHARD-COULSTON, Inc. CM-116
15 East 26th St., N. Y. C. 10

Gentlemen: Please send me a free card of REICHARD-COULSTON concrete colors.

My name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

A list that will help you sell more CONCRETE MASONRY

The choice of construction materials is greatly influenced by architects, engineers and builders. Those who design and build quality concrete masonry structures are valuable assets to your business.

Portland Cement Association advertising is helping you turn this relationship into more sales. Every month advertisements in leading farm and home magazines tell millions of readers to call their local concrete masonry manufacturer for the names of architects and builders experienced in concrete masonry design and construction.

Here's how you can capitalize on the above facts: Maintain a list of architects and builders in your area who have established a reputation for designing and building quality concrete masonry structures. Then when a prospect calls, use this handy reference to recommend a dependable architect or builder. Remember, such dependability is important because every good job sells others.

Using such a file of reliable architects and builders is one of three essential steps in developing more business. The others are: (2) making quality block that complies with ASTM and Federal specifications for moisture content, strength and water absorption and (3) keeping a list of quality concrete masonry structures in your community from which you can select examples to show prospects when they call.

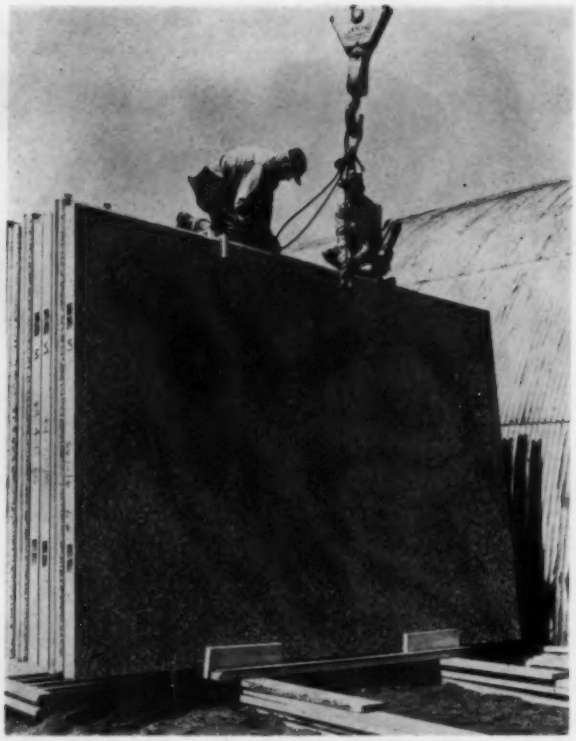
PORTLAND CEMENT ASSOCIATION

33 W. Grand Avenue, Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

Fort Meade Building To Have Colorful Precast Panel Walls

Marietta Concrete Corp. Supplying 1,100 Color-Faced Panels



These color-faced Marietta Concrete Corp. panels resemble more expensive stone facing, and can be erected with speed and economy. More than 1,100 sections will be used in the Fort Meade project to cover 87,000 sq. ft. of exterior wall space.

WHEN it has been completed in 1957, the military building at Fort Meade, Md., will be the world's largest structure of architecturally-faced precast insulated concrete wall panels. The Marietta Concrete Corporation, Marietta, Ohio, is making the panels for this project at its branch plant in Baltimore, Md. More than 1,100 panels will be used to cover 87,000 sq. ft. of wall space for the new building, and they are being put in place by an 11-man Marietta erection crew.

In construction, the Marietta panels, which for this job are faced with Cardiff green stone and royal green stone, are mounted on support angles bolted to the reinforced concrete frame of the building. They resemble expensive stone facing, and can be erected with the speed and economy of curtain wall construction. The average section measures 6 ft. 6 in. in width.

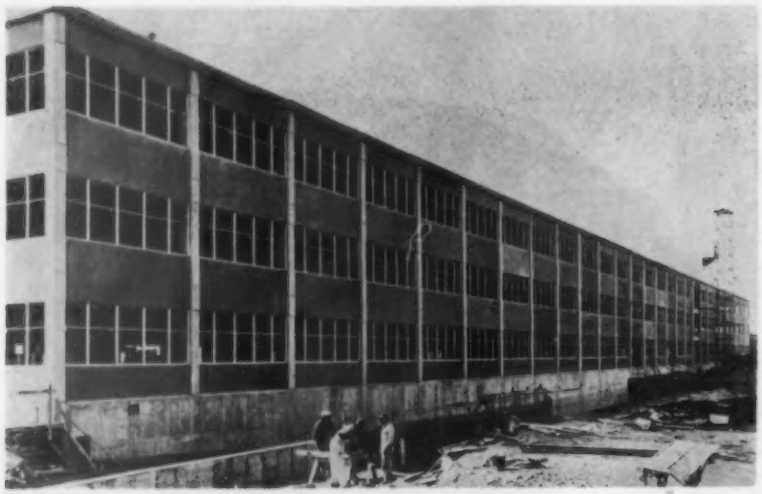
Construction of the precast sections at Marietta's new $100,000 plant in Baltimore has been carried out in co-operation with the John J. Earley Studios of Rosslyn, Va. This company originated and developed the idea of plastic mosaic architectural units, and since 1915 has supplied functional and decorative mosaic and wall panels for governmental, memorial, sacred, and commercial structures. Marietta has pioneered the development of precast insulated concrete wall panels with broomed and smooth finishes, and has also perfected the new wall panels with architectural concrete facings. In the past few years Marietta has produced 4,000,000 sq. ft. of various types of panels.

Panels being made for the Fort Meade project consist of two 1¾-in. layers of concrete separated by 1½ in. of glass fiber insulation. Heat transmission coefficient U is 0.14, and the panels are good acoustic insulators as well. Structurally, the sections are designed to carry their own weight plus the weight of the windows they support. In addition, they are reinforced laterally to withstand winds up to 100 m.p.h. To make each panel function as a unit, the two concrete shells enclosing the insulation material are connected by a series of expanded metal channel-shaped shear ties.

Since the panels are cast face down at the factory, it is important to prevent segregation of facing material. For this reason the concrete is deposited first in wheelbarrows placed close to the batcher. It is then wheeled to the forms, where it is gently placed by hand shovels and padded down with a mason's trowel. After 30 minutes a pre-assembled reinforcing basket is placed in the mold. The first layer of structural backup concrete is then deposited. Since this mix has considerably less slump than the facing mix, it is deposited in the forms by a crane bucket.

Glass fiber insulation sheets, precut to fit between the expanded metal shear ties, go into place after the concrete has been leveled off. Finally, the top layer of mesh reinforcing is wired to the reinforcing basket, and the second layer of structural back-up concrete is spread, screened, and wood-floated. Pneumatic vibrators fastened to the underside of the steel forms are used to consolidate the different layers of concrete. It is necessary to use care not to over-vibrate the concrete, in order to avoid segregation; over-vibration could also affect the water-cement ratio by producing water gains in the forms.

After 24 hours the panels are picked up from the casting floor by an overhead crane and carried to the processing area, where they are set down nearly vertically against a pair of A-frames. Equipped with electric sanding machines and wire brushes, the processing crew first sands the panels to remove the surface film of



This partial view of the building shows the manner in which exposed aggregate concrete wall panels are being used in curtain wall construction at Fort Meade.

cement formed in the casting mold. Later the surface is brushed to expose the aggregate.

An acid wash is next used to clean the aggregates and bring out the color and lustre of the stones. Care has to be taken that none of the matrix is eaten away by this process since the color of the panel might be affected. Compared to the stones, the matrix is light in color; so if the stone relief is deepened, the color of the panel will also deepen.

Shortly after the washer completes the acid swabbing of the panel, a hose man washes away all traces of the acid. In addition to cleaning the panel, the hosing constitutes a part of the wet-curing process. The panels are then covered with saturated burlap and paper, and the thermostats are set at 70 deg. F. to control the temperature. After 15 to 20 hours of curing the panels are moved to another location in the plant, where they are kept continuously wet on both sides for four days.

After the shop curing period, the panels are taken to a yard where they are stored for three more weeks. In the summer the panels are draped in sheets of muslin to keep them from drying out too quickly; in winter they are covered with heavy tarps to protect them against thermal shock.

Construction specifications require a minimum strength of 1,200 p.s.i. before the side forms can be removed and the panels can be handled. Any translation or rotation of the panels without the support of the steel forms is accomplished in a vertical or nearly vertical plane.

For their quick trip to the job location, the panels are placed on trailers and trucked to the site. Here a mobile crane picks them up and sets them in place, to be attached to angles on the face of the columns. These angles are bolted to wedge inserts set by the concrete contractor at the time he concretes the columns. Average erection time for a panel is 10 minutes.

Marietta exposed aggregate panels are made in a wide variety of surface textures, from a coarse to a highly-polished mirror-like finish. The aggregates may be quartz, granite, ceramics, or vitreous enamels. They are imbedded in white or colored matrix to reveal a permanent, sparkling, non-fading color which cannot be dulled by weather.

The building at Fort Meade is being constructed for the government under the supervision of the Corps of Engineers, U. S. Army, Baltimore District, with Colonel Stephen E. Smith as contracting officer and Lt. Col. E. J. Ribbs as resident engineer. Architects for the structure are Reisner & Urbahn of New York City. Anderson-Nichols & Co., Boston, Mass., are the engineers; and construction is a joint venture of general contractors Charles H. Tompkins Company, Washington, D. C., and J. A. Jones Construction Company, Charlotte, N. C.

N.Y. Concrete Board

(*From page* 260)

being developed for central mixing plants and their operation. The grievance committee considers all causes of disagreements or complaints which may develop.

Directors of the C.I.B. presently include the following: Dugald J. Cameron, Concrete Reinforcing Steel Institute; Roger H. Corbetta, The Cement League; Joseph Di Stasio Sr., Structural Engineers Society; Samuel Kessler, American Institute of Architects; Elliott A. Haller, testing laboratories; M. J. McMillan, portland cement manufacturers; Anthony Pope, ready-mix manufacturing companies; Emil Praeger, American Society of Civil Engineers; F. E. Schilling, The Cement League, and H. E. Tear, The Cement League.

Garofola & Jensen Co. Install 7,200-Block Per Day Machine

The Garofola and Jensen Company has doubled the capacity of its block plant at Pleasantville, N. J., with the installation of a Stearns block machine capable of turning out the maximum of 7,200 8- by 8- by 16-in. equivalents per 8-hour day. A special section was built to house the new machine.

Now in its twelfth year of operation, the Garofola and Jensen Company makes cinder block, concrete block, and slag block.

Workmen at the Baltimore, Md., plant of Marietta Concrete Corp. are shown pouring structural backup concrete for one of the architecturally-faced precast insulated wall panels.

ERIE AUTOMATIC MODEL CONCRETE PRODUCTS PLANT "COMES THROUGH IN A TIGHT SPOT" for DURASTONE CO.

See how nicely Erie's trim, compactness fits into Durastone's limited space setup. Electronically controlled, pre-set batching equipment includes a 160 cu. yd. bin, 50 TPH cement elevator and 900 bbl. ground storage silo. Production averages 45 batches per hour.

BACK in 1933, Angelo and Victor Beretta founded a new concrete products company at Saylesville, Rhode Island. By 1956, their highway curbing, building trim, bridge beams, and pre-fab floor and roof units were in ever-increasing demand. Some 120 persons were on the company's payroll, now known as "Durastone Co., Inc., Durastone Flexicore Corp., and Duraflex Sales and Service Co."

The Berettas found further progress blocked by an out-dated, manually controlled batch plant. They needed a new one that would produce more, finer concrete. But, and here was the rub. Within their existing operation they had severely limited space available for a new batch plant. Otherwise they would have to spend hundreds of thousands to rebuild.

After looking in every direction, the Berettas found that an Erie Strayer batch plant best filled their needs. Here was a plant that not only had a proven record for faster production of specification concrete—*the ERIE was also compact enough to fit into the limited space.*

Durastone's ERIE plant with electronic controls for full automatic batching was purchased from Builders' Equipment and Supplies Co., West Medford, Mass. Cement, formerly obtained in bags and opened by hand, is now delivered in bulk in carload lots. A powered traveling monorail batch hopper carries the batched material to the mixers. Sand, pea stone, half-inch stone, marble aggregate, cinders and slag—are delivered by an open conveyor to the eight-compartment bin. By merely pushing the start button just the right amount of aggregates and cement for the specific mix is batched.

Following several months operation, the Berettas freely credit their ERIE plant with faster production, with finer quality, with money-making savings in labor and materials. Precision control and improved mixtures have substantially reduced the "slump" that is often a major barrier in pre-casting quality concrete products. For Durastone Co., Inc., as for so many other companies, the ERIE has again proven the concrete batch plant that's "made best for the job."

Write for Catalogs

ERIE STRAYER COMPANY

3116 GEIST RD. ERIE, PENNSYLVANIA

N.R.M.C.A. Announces Winners In 1956-57 Safety Contest

During the period from July 1, 1955, to June 30, 1956, the safety contest sponsored by the National Ready Mixed Concrete Association was conducted for the first time with an added (fifth) classification. The new group (A) included operations producing more than 250,000 cu. yd. of concrete during the 12-month period. This arrangement resulted in a more equitable competition for large companes operating in heavily populated metropolitan areas. The following firms, winners in their respective classifications, will be presented with trophies by a representative of THE CONCRETE MANUFACTURER at the annual N.R.M.C.A. convention next February.

Class A—Anderson Concrete Corporation, Columbus, Ohio, which operated without one injury to employees, only one injury to non-employees, and seven property damage accidents during the contest.

Class B—(companies producing from 100,000 to 250,000 cu. yd. of concrete during the contest period) the Winkworth Fuel & Supply Company, Detroit, Mich., which operated without an injury to employees or non-employees and had only three property damage accidents during the contest.

Class C—(companies turning out from 50,000 to 100,000 cu. yd. of concrete in the contest year) Stewart & Nuss, Inc., Fresno, Calif., which won the Class C trophy for the second successive year and for the third time in the last four years. Ten other firms in this contest classification had injury-free records; however, according to the established contest rules, the operation with the greatest combined total of output and man-hours worked—in this case, Stewart & Nuss—was considered the winning entrant. The other injury-free plants in this classification, which will be awarded Certificates of Achievement in Safety, are as follows:

Buffalo Slag Co., Inc., Buffalo, N.Y.
Builders' Concrete, Inc., Muncie, Ind.
W. G. Block Co., Davenport, Iowa
Fischer Lime & Cement Co., Memphis, Tenn.
Lake Cities Corp., East Chicago, Ind.
Milne Ready Mixed Concrete, Inc., Boulder, Colo.
Morse Sand & Gravel Co., Pawtucket, R.I.
C. W. Shirey Co., Waterloo, Iowa
Superior Ready Mixed Concrete Co., Gary, Ind.
Travis Materials, Inc., Austin, Tex.

Class D—(firms producing from 25,000 to 50,000 cu. yd. of concrete during this contest year) Kuhns Concrete Company, Springfield, Ohio, which had the greatest combined total of yards of concrete and man-hours among the accident-free plants in its classification. The 17 other operations in this group, which will receive Certificates of Achievement in Safety, are the following:

Beaver Ready Mix Concrete Co., Juneau, Wis.
Concrete Service Corp., Wheaton, Ill.
J. H. Findoff & Son, Madison, Wis.
Glynn Concrete Co., Brunswick, Ga.
Grand Junction Building Materials Co., Inc., Grand Junction, Colo.
Grohne Concrete Products Co., Decatur, Ill.
M. J. Grove Lime Co., Frederick, Md.
Hollywood Ready-Mixed Concrete Co., Inc., Baton Rouge, La.
Maysville Ready Mix Concrete Co., Maysville, Ky.
Mission Rock Co., Santa Paula, Calif.
Modahl & Scott, Inc., Bloomington, Ill.
Mooney Bros. Supply Co., New Castle, Pa.
Spaulding Materials & Concrete Co., Oceanside, Calif.
Spartanburg Concrete Co., Inc., Spartanburg, S.C.
Transit-Mix Concrete Co., St. Louis, Minn.
Trux-Mix Concrete Co., Dallas, Tex.
United Materials Co., Allentown, Pa.

Class E—(companies producing less than 25,000 cu. yd. of concrete during the contest period) the Trumbower Company, Inc., Nazareth, Pa., which had the largest combined total of cubic yards of concrete and man-hours among 46 companies in this group. The other 45 accident-free operations, which will receive Certificates of Achievement in Safety, are as follows:

Alvin Building Materials, Inc., Alvin, Tex.
American Aggregates Corp., Greenville, Ohio
Bama Concrete Products Co., Tuscaloosa, Ala.
Beckman Supply Co., Hammond, Ind.
Bluffton Ready Mix Co., Bluffton, Ind.
J. C. Blunk Construction Co., Ottumwa, Iowa
James L. Bracewell Co., Toccoa, Ga.
Cayll's, Inc., Waukesha, Wis.
Central Supply Co., Clarksburg, W. Va.
Chaussee-Swan Gravel Co., Boise, Idaho
City Ready-Mix, Inc., Michigan City, Ind.
Concrete Materials, Inc., Morristown, Tenn.
Corvallis Sand & Gravel Co., Corvallis, Oreg.
William E. Daily, Inc., North Bennington, Vt.
Edgerton Ready Mix Concrete Co., Edgerton, Wis.
Fort Dodge Concrete Co., Inc., Fort Dodge, Iowa
Gethmann Concrete & Material Co., Gladbrook, Iowa
Helena Sand & Gravel Co., Inc., Helena, Mont.
E. C. King Contracting Limited, Owen Sound, Ontario, Canada
Knitt Construction Co., Viroqua, Wis.
L & S Concrete, Inc., New Bedford, Mass.
Land Construction Co., St. Joseph, Mo.
A. L. Lewis, New Hope, Pa.
Macy Brothers, Inc., Lynnville, Iowa
Maxymillian, Inc., Adams, Mass.
Mesaba Construction Co., Hibbing, Minn.
Nelsen Concrete Culvert Co., Inc., Mt. Vernon, Ill.
Daniel O'Connell's Sons, Inc., Holyoke, Mass.
Pittman Concrete Co., Hattiesburg, Miss.
Randecker Brothers, Lock Haven, Pa.
Ready Mix Concrete Co. of Dubuque, Dubuque, Iowa
Ready Mixed Concrete Co., Annandale, N. J.
Ready Mixed Concrete, Inc., Fond du Lac, Wis.
Shamokin Ready Mixed Concrete Co., Inc., Shamokin, Pa.
Shawnee Ready Mix Concrete Co., Plymouth, Pa.
Standard Materials, Inc., Modesto, Calif.
Stephens Ready-Mix Concrete Co., Cairo, Ill.
Stewart-Nattinger, Inc., Clinton, Mo.
Superior Ready Mixed Corp., Covington, Va.
Thorn Lumber Co., Martinsburg, W. Va.
U. S. Concrete Products Co., Upper Sandusky, Ohio
Wells Concrete Products Co., Wells, Minn.
Woodward-Pollock Lumber Co., Coldwater, Mich.
Worthington Ready Mix Concrete Co., Worthington, Minn.
O. C. Yocom Co., McMinnville, Oreg.

A.S.C.E. Research

(*From page* 240)

be discontinued since the A.C.I. Building Code, a more recent document, together with other codes of practice, satisfies present needs. This action has been approved by the A.S.C.E. Structural Division Executive Committee and the A.C.I. Technical Activities Committee.

A final report has been made for the Committee on Ultimate Strength Design, under Leo H. Corning, Portland Cement Association. The Committee on Shear and Diagonal Tension, under the chairmanship of C. S. Whitney, New York and Milwaukee consulting engineer, has indicated that a report on research will soon be completed.

Professor Phil M. Ferguson, University of Texas, department of civil engineering, becomes chairman of the Committee on Masonry and Reinforced Concrete, succeeding Robert F. Blanks.

Robert D. Dikkers Appointed To N.C.M.A. Staff in Chicago

The appointment of Robert D. Dikkers as an assistant engineer for the National Concrete Masonry Association at its Chicago headquarters has been announced by R. E. Copeland, director of engineering.

In his new post, Mr. Dikkers will handle assignments relating to structural problems in concrete masonry, as well as conduct field investigations. He was previously a junior civil engineer with the Harza Engineering Company, Chicago.

After his graduation from Northwestern University and further studies at the California Institute of Technology, Mr. Dikkers spent two years in the Army Corps of Engineers doing topographical survey and mapping work. He is a junior member of the American Society of Civil Engineers and Tau Beta Pi, honorary engineering fraternity.

Robert D. Dikkers

Our Cover Picture

The cover picture this month proves the fact that two well known industries—ready-mix and prestressed concrete—are increasingly co-operating to accomplish a real job with the newer material. In this photograph, taken at the new prestressing beds of Pennsylvania Prestressed, Inc., York, Pa., we see all the elements of manufacturing prestressed concrete—steel forms, strand depressing device, testing, vibrators, low-slump (high-strength) concrete, and typical ready-mix delivery.

Dr. A. M. Ozell, of the University of Florida engineering faculty, and technical editor of the *Prestressed Concrete Institute Journal*, has announced the opening of Waylan Engineering Company, Orlando, Fla., in association with Wayne D. Heasley, architect. The firm will provide structural consultation in prestressed concrete, reinforced concrete, and steel design.

F.C.C. Releases Decision On Split Radio Channels

According to information received from Vincent P. Ahearn, executive secretary of the National Ready Mixed Concrete Association, Washington, D. C., the Federal Communications Commission on September 24 released its decision in the split channel proceedings. The following are the principal changes which may affect operators of fleets using radio:

1. The Commission has adopted new technical standards providing for a separation between channels of only 30 kilocycles rather than the 60-kilocycle separation now required. These revised standards are applicable *only* to equipment operating on frequencies within the 152- to 162-megacycle range. Equipment operated on frequencies within the 25 to 50 or 460 to 470-megacycle bands are not affected by this revision of the rules.

2. All radio equipment operated on a frequency in the 152- to 162-megacycle band must conform to the revised rules as of November 1, 1963. Thus, a company which is now licensed to operate conventional broad-band equipment in this range of frequencies, or which becomes a licensee on one of these frequencies prior to November 1, 1958, may continue to use broad-band equipment until November 1, 1963. Such a licensee may repair or modify any existing system by adding new broad-band units at any time prior to November 1, 1963. However, all applications for new licenses filed after October 31, 1958, must specify narrow-band equipment.

3. A considerable number of new frequencies will eventually become available in the 152- to 162-megacycle band as a result of this decision. The N.R.M.C.A. has already requested that these additional frequencies be allocated to the Special Industrial Radio Service. Since competing requests for these frequencies have also been submitted by other types of radio users, the Commission has indicated that it will soon institute a new rule-making proceeding to determine which of the competing radio services will be permitted to use the new frequencies. N.R.M.C.A. will file appropriate comments when such a proceeding is instituted and will urge that the eligibility standards which prohibit the use of industrial radio by some producers be relaxed.

No immediate equipment problem is presented by this revision of the rules. Existing licensees need not convert their equipment until October 31, 1963. While this seven-year equipment amortization period is 15 months shorter than that requested by N.R.M.C.A., it is a considerably longer period than that permitted in a number of similar Commission proceedings. This amortization period will cover the useful life of most of the equipment operated by ready-mix companies.

Several equipment manufacturers have stated that most equipment manufactured after 1953 is readily convertible to split channel operations at a cost of approximately $50 for each mobile unit and transmitter. The conversion costs for equipment of an earlier vintage depends entirely on the make and model but will generally run somewhat less than $100 per mobile unit. New narrow-band equipment costs only slightly more than conventional equipment. It should be noted, however, that no attempt is being made here to furnish advice on individual equipment problems. Each operator is urged to consult with his own radio equipment supplier to determine the exact effect of the revised rules.

N.C.M.A. Sales Conferences Slated for N. Y. City, Atlanta

Because the recent National Concrete Masonry Association sales conference in Chicago was such an outstanding success, planning is under way for two regional conferences.

On November 16 there will be a northeastern regional meeting at the Hotel New Yorker in New York City. Another conference is scheduled for the southeastern region on November 29. This event will be held in Atlanta in the Atlanta Biltmore.

According to W. P. Markert, N.C.M.A. director of promotion, the programs for both meetings will be similar to that of the Chicago conference. Speakers will be selected from cities in the respective areas.

The Material Service Corporation, Chicago, Ill., has opened ready-mix yard No. 31 at Deerfield Road and Route 41, Highland Park, Ill., to service the Lake County area. This yard was formerly owned by the North Shore Ready-Mix Company.

Collinwood Shale Brick & Supply Company's east side yard, Cleveland, Ohio. At A, the main office, the dispatcher writes orders that are transmitted to the main mixing bin (B) and the secondary bin (C). The batch is mixed while the driver is en route to bin.

Electronic Longhand

Eliminates Errors in Materials Handling

By H. C. MOATZ JR.
Collinwood Shale Brick & Supply Co.
Cleveland, Ohio

Another P&O Exclusive

NOTHING new in using sales orders, delivery tickets, batch loading forms, dispatching tickets and accounting control forms . . . but it is new when it's all done by one man at one time from one place. Not as imaginative, perhaps, as supersonic flight into outer space, but an interesting example of the application of electronics in modern materials handling. At Collinwood, the dispatcher's office is the nerve center of a complete, accurate system of control that makes the entire transaction—from customer's order to shipment and billing—as simple as a b c.

In addition to the manufacture of face brick, Collinwood Shale Brick and Supply Company is a major producer of concrete, serving an area of some 220 sq. miles in northeastern Ohio. As anybody knows who has ever had anything to do with the production and handling of concrete, time is of the essence. Concrete just doesn't sit around and wait . . . it just sets, and permanently. The contractor doesn't want it on the job until he's ready to pour, and then he wants it "right now"! Mixes vary according to engineering specifications. Certain types of trucks are better suited to the job than others, depending on the distance to the site, road conditions, etc. And certain trucks can be loaded only at certain bins, depending on whether they are rear-end loaders or top loaders.

Prior to the installation of telescribers, the Collinwood driver picked up from the dispatcher a delivery ticket which gave the name of the customer, the address of the job, and the mix to be delivered. He was instructed verbally to which bin he must go for his load. When he reached the bin, he called out the mix specifications to the bin operator. With some 50 drivers reporting, the total time lost amounted to a sizable figure; and the noise from the truck and the rotating bin hopper, made errors easy. Then, too, the truck and the driver were idle while the batch was being mixed.

All this delay and confusion has been eliminated by installing a Tel-Autograph "Instan-Form" telescriber

system between the dispatcher's office and the mixing bins, located several blocks away. Now the dispatcher writes only one order. Simultaneously and instantly, it becomes a delivery ticket, a delivery receipt, mix instructions to the bin operator, and billing data for the accounting department. There is no chance for verbal misunderstandings with a written record.

Here's how it works: the order department writes up the order as it is received from the customer and this order then goes to the dispatcher. When the driver of the proper equipment needed for delivery of the order checks in to the dispatcher's office, the dispatcher writes, by telescriber, the specifications for the mix, the quantity, the mixing bin to be used, the customer's name, and the address of the job. This order is written in triplicate, and it is also transmitted instantly to the operator of the mixing bin selected. The batch is being mixed while the driver is on his way to load the truck.

The three copies of the delivery ticket are distributed as follows: the driver gets two copies, one of which he leaves with the customer. The other, after being signed by the customer as a delivery receipt, he turns in to the dispatcher on his return for a new assignment. The third copy goes to the accounting department for invoicing. The reverse side of the "Instan-Form" is used to call the customer's attention to fast service and accurate delivery made possible by the system.

When the driver reaches the designated mixing bin, he matches the number of the mix on his delivery ticket with the number assigned to that particular batch as shown on the telescribed instructions received by the bin operator when the delivery ticket was written up. No chance for misunderstanding here!

Considering everything that is accomplished simply by merely writing one set of instructions, just once, it might seem that the cost of this system and its operation and maintenance would be rather high. To the contrary, it is normal to the point that the savings it effects amount to many times its cost. The equipment used in the Collinwood installation consists of one TelAutograph Transceiver and four TelAutograph receivers. The Transceiver and two pilot receivers are located in the dispatcher's office. They provide for writing the delivery orders in triplicate. A specially designed and preprinted "Instan-Form" supplied by TelAutograph is used for this purpose. The other two receivers are located at the mixing bins. The dispatcher selects the desired bin by using either one of the two selector keys. As he writes the delivery order, it is transmitted instantly to the bin operator selected.

Contact with drivers is maintained by two-way radio. This permits diverting trucks in transit from one job to another if necessary; or delivery instructions can be given for leftovers resulting when the customer orders more material than is required.

Greater efficiency in processing and expediting orders results in faster

Right: The main bins (center) and the secondary bin (left) with trucks loading. Both locations receive written delivery tickets simultaneously.

Below: A portion of the company's fleet of ready-mix trucks serving northeastern Ohio. Deliveries are speeded up by electronic transcribers.

Left: Mixing bin operator Frank Kemper (left) and his assistant read an order just received for batching and loading.

Right: Dispatcher Bob Radtke, in the main office at the plant, writes an order on the telescriber controlling the movement of men and equipment. The order is instantly copied on the other two receivers and transmitted to the pre-selected batch mixer.

service to Collinwood's customers. The company benefits, too, because it is possible to handle more orders per day without having to add to equipment or personnel. By the use of centralized dispatch control, men and equipment are kept moving, and the whole operation runs more smoothly. One of the biggest advantages of the system is that it eliminates any chance of errors due to verbal misunderstandings. This protects both the customer and company.

"Electronic longhand," the modern miracle of hand-written instant communication, ranks among the big technical developments of our time. Its application at Collinwood Shale Brick & Supply Company is a typical example of management's use of this better, faster way of "saying it in writing" to gain a better return on its capital investment.

Houdaille Industries, Inc., has purchased the Gravel Products Corporation, Buffalo, N. Y., a 30-year-old ready-mixed concrete and gravel producing firm. The acquisition was made through a purchase of the capital stock for an undisclosed amount.

Victor Brunner was elected president of the company.

BULK MATERIAL CONTROL
under
Pressure or Vacuum

New Roto-Bin-Dicator mounts outside bin, at any angle, for bin level signaling or machinery control. Material loads on paddle actuate Micro switch in motor housing. Flexible paddle shaft permits use with large or lumpy materials. **Explosion-Proof U. L. Listed Units Now Available.**

ROTO-BIN-DICATOR

BIN-DICATOR
BIN-FLO AERATOR

Low pressure air diffuser assures steady flow of fine, dry materials that tend to pack in storage.

The original diaphragm-type bin level indicator for all ordinary applications.

Complete Illustrated Literature FREE

THE BIN-DICATOR CO.
13946-W Kercheval • Detroit 15, Mich.
Phone: VAlley 2-6952

WE SELL DIRECT • PHONE ORDERS COLLECT

KOGL'S Patented UNIT STEP

One-piece
Non-skid
Precision-Perfect
Concrete Step

CONVENIENT • PERMANENT • ATTRACTIVE

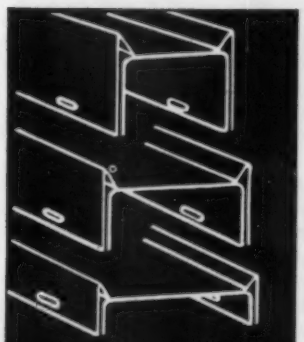
Unit Step Forms made in standard widths of 4, 5 an 6 feet. 1 to 6 risers high, one piece, with or without platforms. Steps and railings available in unlimited variations.

Write for full details

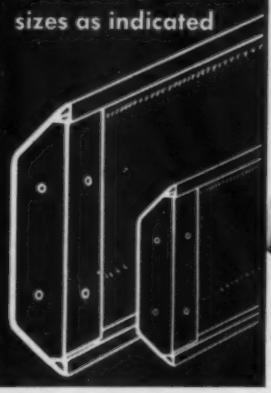
UNIT STEP FORM CO.
S. Robert Road, R. 10, South St. Paul, Minn.

Invest in only 4 sets of basic FORM-CRETE *I-Beam steel forms...*

PROFITABLY produce 30 different sizes of standard pre-stressed concrete I-Beams . . .

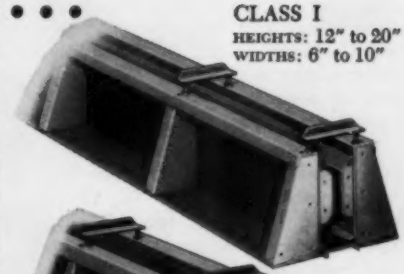


Interchangeable pilot liners and material displacement inserts are fabricated for each Class to produce all product sizes as indicated



Side forms, inserts and pilot liners in all four classes are fabricated in 10-foot lengths for most efficient casting operations. Specially designed tie bar assemblies (adjustable to two or three casting positions for required widths) hold top of forms firmly in place for accurate casting. Bottoms of forms and pilot liners are locked in position by specially designed Panel lock bars and wedges to provide uniformly smooth pre-stressed I-beams that will meet the most rigid specifications. Prefabricated pre-stressed concrete construction is sweeping the country because of lowered construction costs when used. Architects everywhere are specifying it. Get into this lucrative market now—send for our descriptive, fully illustrated bulletin showing the complete line of Form-crete steel forms—write today!

CLASS I
HEIGHTS: 12" to 20"
WIDTHS: 6" to 10"



CLASS II
HEIGHTS: 20" to 32"
WIDTHS: 8" to 12"

CLASS III
HEIGHTS: 36" to 48"
WIDTHS: 14" to 18"

CLASS IV
HEIGHTS: 52" to 64"
WIDTHS: 20" to 24"

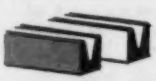
SEND FOR **FORM-CRETE BULLETIN 200** PF-6

FOOD MACHINERY
AND CHEMICAL CORPORATION
FLORIDA DIVISION
LAKELAND, FLORIDA

FORM-CRETE STEEL FORMS FOR CASTING REINFORCED OR PRESTRESSED CONCRETE

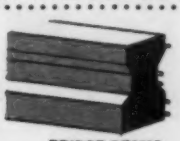
DOUBLE "T" SLABS

SINGLE "T" JOISTS

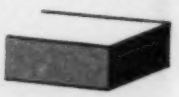


HOLLOW AND SOLID LINTELS

SQUARE AND OCTAGONAL PILING



BRIDGE BEAMS



PAN TYPE BRIDGE DECKS

FIRST N.C.M.A. SALES CONFERENCE

Chicago Meeting Well Attended

THE first of a series of regional National Concrete Masonry Association sales and merchandising conferences was held on September 13 at the Hotel Sherman, Chicago, Ill. Based on plans for providing assistance to member company personnel in extending the use of concrete masonry through new and improved promotional and educational methods, the program got off to an impressive start with nearly 150 members in attendance from 18 states, Canada, and Puerto Rico.

The theme of the Chicago meeting—a quality, marketable product—was presented by E. W. Dienhart, N.C.M.A. executive secretary. Panel discussions and individual addresses covered a number of important topics including selling to architects, contractors, and builders; publicity; advertising programs; and exhibits.

Introductory comments by N.C.M.A. president Earl W. Peterson, Ideal Cement Stone Company, Omaha, Nebr., pointed out that productive capacity on the average has increased fivefold since 1945. Cautioning against price cutting as a means of moving high production, Mr. Peterson stated that sales programs must be comparably geared to high output. He added that sales promotion of concrete masonry has lagged to some extent in comparison with competitive materials. Noting that the association alone can not handle all promotion, Mr. Peterson stated that members must bear down at the local level; he expressed the hope that these sales and merchandising conferences would provide incentive.

Speaking on the subject of *The Man of the Year—the Salesman*, Fred A. Palmer, sales consultant, Columbus, Ohio, pinpointed some of the present day *pros* and *cons* of selling as a career, along with some of the problem factors affecting this industry's sales record in general. Mr. Palmer stated that frequently producers are not taking care of interested customers; that the trouble starts at the top when management does not take a personal interest; that too often there is an unwillingness to spend enough money in a sales department; that sales departments are often understaffed; and that all-out selling effort is the answer to production—not price cutting.

Mr. Palmer described some of the personal problems of sales personnel which producers must consider in maintaining an efficient sales staff. He mentioned the new approach to a division of time between three days on the road and two on the telephone during a working week. He said that salesmen's wives must be given due consideration, and declared that dividing a salesman's time between sales and other efforts defeats the primary purpose of a merchant—to sell his goods.

A panel discussion on *Selling to the Architect*, moderated by Mr. Palmer included the following panel members: Conard Case, sales manager Spickelmier Company, Indianapolis, Ind.; V. Vickrey, partner, Perkins & Will, architects, Chicago, Ill.; D. Coder Taylor, Yost & Taylor, architects, Kenilworth, Ill.; John D. Jarvis, architect, Chicago, Ill.; and Arthur Gorham, district manager, *Progressive Architecture* magazine, Chicago.

Right: During the panel discussion on selling to the architect Fred A. Palmer (standing) was the moderator. Other panel members at the table (left to right) are: Conard Case, V. Vickrey, D. Coder Taylor, John D. Jarvis, and Arthur Gorham.

Below: The speaker at the luncheon was James Cleary, vice-president, Roche, Williams & Cleary, Inc., Chicago. Others at the table are (left to right) R. E. Copeland, N.C.M.A.; E. W. Peterson, president of N.C.M.A.; W. P. Markert, N.C.M.A.; and E. W. Dienhart, N.C.M.A.

Another panel that considered the subject of *Selling to the Contractor or Builder* was also moderated by Mr. Palmer. In this discussion the following participated: Arthur Bohnen, builder, Skokie, Ill.; Conard Case; Alfred Kamin, attorney, Chicago; V. S. Wallgren,

DOW

With Dowflake in the mix, concrete attains a strength of 2000 p.s.i. in 7½ days at 25°F!

BETTER CONCRETE FASTER

with Dow Calcium Chloride

Your answer to cold-weather construction problems is Dow Calcium Chloride. It speeds the set of concrete, makes it stronger at every stage. And, as temperature drops, the percentage of time saved increases.

At a temperature of 25°F., for instance, an addition of 2% of Dow Calcium Chloride to the mix provides a strength of 2000 p.s.i. . . . in only seven and one-half days! Compare this to the usual six weeks required by plain concrete at this temperature, and you will readily see why contractors specify it. You'll also notice other marked improvements any time the temperature drops below 70° F.

Dow Calcium Chloride provides more uniform curing in less than one-half the normal time. It makes concrete more workable, easier to finish. It assures complete fill in forms and faster flow through chutes. It saves time and labor, and results in smooth, wear-resistant surfaces.

For further information, contact your Dow distributor. He offers both types of our calcium chloride: Peladow®, a 94-97% concentration in pellet form; and Dowflake®, 77-80% concentration in flake form. Or write to us direct for free literature. THE DOW CHEMICAL COMPANY, Dept. IN 782R-1, Midland, Michigan.

you can depend on DOW CHEMICALS DOW

Now! MORE GOOD SPLITS with "EQUI-SPLIT" NEW Precision Block Splitter

Precision Cuts 1 ⅝" to 8"

Pat. No. 2753861

MORE PROFITS *for you!*

Here it is! "Equi-Split" . . . the concrete block splitter that *does away* with block breakage! "Equi-Split" applies *equal pressure* on full surface of block . . . regardless of irregularities . . . making good splits every time. "Equi-Split" is the way to meet the growing demand for split colored concrete blocks. Use the handy coupon below . . . TODAY . . . for full information!

SELF-EQUALIZED PRESSURE!

Four segregated blades on both top and bottom jaws adjust the "Equi-Split" to block form. *Self-equalized* blade pressure is assured by three equalizer-adjustment pressure stabilizers. Uniform pressure gives you uniformly good splits every time!

- FOR 16½" BLOCK
- MADE TO ORDER FOR SIZES TO 26" BLOCK

PRECISION MACHINE WORKS

P. O. Box 4691 Capitol Hill Station
Oklahoma City, Oklahoma

MAIL COUPON TODAY!

Precision Machine Works
P. O. Box 4691, Capitol Hill Station
Oklahoma City, Oklahoma

Gentlemen: Please send me complete information on the "Equi-Split" Precision Block Splitter.

☐ Standard 16½" machine
☐ Special size machine to 26"
☐ Feeder attachments
☐ Portable equipment

Name _____

Street _____

City _____ State _____

mason contractor, Chicago; and Charles Goodall, editor in chief, *Marketing Directory of American Builder*.

In these discussions it was brought out that there seems to be a lack of effort to call on the architect directly and to acquaint him with the high quality and potential use of modern concrete block. It was further indicated that a salesman should not be merely an order taker, but should possess knowledge of technical features and uses. Due to the fact that most concrete masonry block are regarded as of high-quality products, it was said, service should be furnished along with sales.

Among other suggestions presented to the members it was pointed out that producers should give consideration to inventories, should investigate reinforcing developments and controls of expansion joints, and create consumer demand by participation in promotion.

A luncheon address by James Cleary, vice-president, Roche, Williams & Cleary, Inc., Chicago, emphasized the point that a mass of expensive assistance in the form of brocheures, books, etc., is inadequate in the absence of strong individual producer effort at the local level. Mr. Cleary illustrated his point by presenting for inspection a number of advertisements, news releases, and newspaper series prepared and presented by local operators all over the country. He also noted that a number of members had contracted for spot commercials and time on local TV and radio outlets.

Topics presented during the afternoon session included a talk on *How to Get the Most Out of Your Exhibit Dollar*, by S. J. Fairweather, president, General Exhibits & Displays, Inc., Chicago; a panel discussion on publicity; *Elements of an Effective Advertising Program*, by John Walker, account executive, Roche, Williams & Cleary, Inc.; a workshop session on major problems in merchandising and selling; and a summary of the conference discussion by W. P. Market, director of promotion for N.C.M.A.

Noting that common sense should be the basis of any exhibit, Mr. Fairweather pointed out the advantage of an end-use setting of a particular product, whether by photo or other means. He emphasized that planning for an exhibit should be done early, so as to take advantage of space and to create a more highly impressive display. It was stated that adequate, qualified manpower should be on hand at all times during exhibit hours.

Members of the panel on publicity included Mr. Palmer; F. E. Doan, advertising manager, The Seng Company, Chicago; R. Knox, manager, public relations bureau, Portland Cement Association, Chicago; and W. Blaha of the N.C.M.A. staff, moderator. Among the points brought in this discussion was the statement that in supplying editors with data on plants or operations, the old formula of who, what, when, why, and how should be followed, and editors should not be expected to make such news into free advertising. It was further suggested that producers be alert to newsworthy developments concerning personnel, products, and operations.

In his discussion of an effective advertising program, Mr. Walker pointed out that all advertising is actually local in nature. While it may be set up as a national program, it is channeled down to the local producer for its effect in his area. Noting that today's audience is a better informed and a more selective group than in the past, Mr. Walker stated that advertising has taken cognizance of those points and has assumed a more intelligent approach. In conclusion, it was stated that advertising is not a mystic art, but actually an effective means of communication between seller and buyer.

Members of the N.C.M.A. who are located in the northeastern region will have an opportunity to participate in a similar meeting at the second regional sales and merchandising conference to be held in the Hotel New Yorker, New York, on November 16. The date and place for a third meeting in the southeastern area will be announced later.

A line of ready-to-use concrete, cement, and mortar mixes, called "Home-Crete," has been developed by G. & W. H. Corson, Inc., Plymouth Meeting, Pa. These new mixes, with all the ingredients in one bag, were designed for repairs and small jobs.

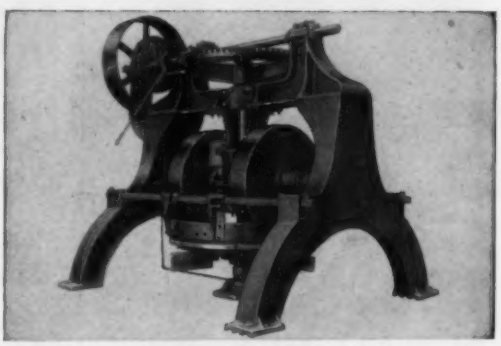
Robert C. Wells of Hobart, Ind., has purchased and taken over the management of the Jackson County Concrete Products Company, Brownstown, Ind. Mr. Wells was general foreman of the Chicago Block Company for the last three years.

BIG VOLUME GRINDING at Low Cost

Ideal For Aggregate Grinding

- Delivers up to 30 yards per hour.
- Handles material wet or dry.
- Grinds cinders, pumice, haydite, slag and quarry and mine products.
- Adjustable to meet volume and size requirements.
- Requires only minimum maintenance.
- Gives years of trouble-free service.
- Has low power consumption.

Huber-Warco Grinders range in capacity from 4 to 75 yards per hour. Whatever your capacity requirement, there's a Huber-Warco Grinder exactly suited to your type of aggregate. Ask for a non-obligating consultation with the Huber-Warco grinding specialist . . . write, wire or phone.



HUBER-WARCO NO. 9 GRINDER

This 30 yard per hour capacity grinder has been designed to give big-volume aggregate production with a minimum of grinding costs. The suspended yoke mounted mullers are adjustable to any height, and for finer grinding, the grinding surfaces run together.

HUBER WARCO

HUBER-WARCO COMPANY

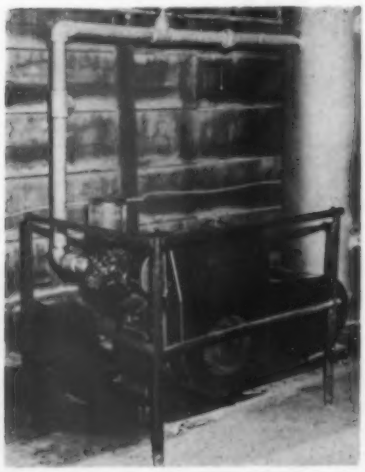
MARION, OHIO, U. S. A.

Road Machinery

CABLE ADDRESS: HUBARCO

ROAD ROLLERS • MOTOR GRADERS • MAINTAINERS • GRINDERS

CM New Machinery and Supplies



• Atlas Copco Pacific's new NT series compressors are two-stage, two-cylinder, single-acting compressors with full pressure lubrication. They are available in models ranging from 10 hp. (45 c.f.m.) to the 25 hp. (105 c.f.m.) unit. **(101)**

• Model E7 Jiffy Lift loader and unloader for concrete blocks, brick, cement, stone, etc., made by the Elberfeld Manufacturing Company, Inc., features four-wheel drive, four-cable suspension, two-side operation. Overall width is 95 in., whether installed as a recessed track or track on bed. The Model E7, which fits all standard 8-ft. wide truck beds, is said to handle loads up to 10,000 lb. with ease. **(103)**

• The Bucket-Phil Model 808-H, designed and manufactured by the Phillips Conveyor Company for the rapid movement of bulk materials from a floor at a vertical angle, is also available with telescoping landing gear that permits conveying material at a 45 to 90 deg. angle. The portable unit is powered by a ½ hp. electric motor, and is available with cast aluminum buckets in sizes up to 6 in. by 3½ in. on centers to meet individual specifications. **(102)**

NOVEMBER, 1956

MORE INFORMATION PLEASE

THE CONCRETE MANUFACTURER
431 S. DEARBORN ST.
CHICAGO 5, ILLINOIS

Please send more information on items described in editorial columns of this issue, as circled below.

101 102 103 104 105 106 107 108 109 110
111 112 113 114 115 116 117 118 119 120

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

The High Speed GRIFFIN Portable Cement Loader

WORKS AT ANY ANGLE
UP TO 300 BBLS./HR.
11' TO 100' IN LENGTH

from bulk cement car ←

10-DAY DELIVERY

Write for Details

to truck ↓

CEMENT Z-Z-Z-Z-Z-OOMS!...in the "ZOOTER"

"ZOOTER" is the modern, simple, economical way to *speed-load* trucks, bins, mixers and batchers from bulk cement cars.

Proved in scores of installations. Operates just as smoothly and easily in vertical position. Cuts loading time and labor costs to minimum.

View at right shows 11 foot unit with wheel-mounted, welded steel tubing frame, adjustable for height, and all accessories for feeding vertically to 21 feet. Price $1259.00, F.O.B. Honeoye, New York.

Also available in standard 11′ to 30′ lengths —over 30′ multiple sections used.

LARRY GRIFFIN CORP., 3001 James St., Syracuse, N. Y., Phone: 73-1514

MORE WEAR PER PAIR

SURETY
TRIPL-PALM
COATED FABRIC GLOVES

2 way savings

TOUGHEST WHERE WEAR IS ROUGHEST
Tripl-Palm design eliminates the usual "failure points"—provides extra heavy palm coating for extra wear and comfort.

NO SEAM HERE
Nothing to rip out — wing thumb construction assures multiplied service life.

IDEAL FOR CONCRETE BLOCK HANDLING
Tests prove Tripl-Palm gives long service. Send for bulletin.

THE SURETY RUBBER CO. CARROLLTON, OHIO

In Canada: Safety Supply Co., Toronto

AUTOMATIC CEMENT WEIGHING

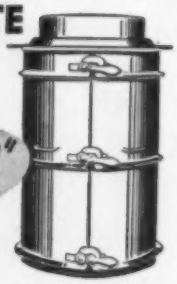
And the automatic weigher batches the cement while the operator runs the mixer.

GWYNNE *Concrete Plants*

BIN BATCHER

J. H. GWYNNE, INC. CAMDEN, OHIO

CALL ON Quinn
For QUALITY
CONCRETE PIPE FORMS



"STANDARD" The World Over

Backed by over 45 years of reliable service, the QUINN Heavy Duty form is recognized as the STANDARD design and the finest concrete pipe form everywhere. Used in making pipe by vibration, spading or tamping. Sizes for pipe from 10" to 120" and larger. Tongue and groove (as shown) or bell end pipe in any length desired. If your pipe orders specify extra large sizes, odd shapes or unusual lengths, there's a Quinn form made to produce the finest pipe at lowest possible cost.

Also Manufacturers of
QUINN CONCRETE PIPE MACHINES

Free CATALOG

Illustrates our complete line of equipment. Contains pages of valuable tips for the concrete pipe manufacturer. Write today for your free copy and estimates.

Quinn WIRE & IRON WORKS
BOONE, IOWA

SAVE MONEY!
UNUSED
6X6 ARMY TRUCKS

International & GMC 2½-ton

- From Government Storage!
- Unused and Guaranteed!
- Factory New Condition!
- Reconditioned Trucks also Available!

Save up to $3,000 on one of our unused Army trucks. See for yourself how TWO of our trucks cost you even LESS than *one* new truck.

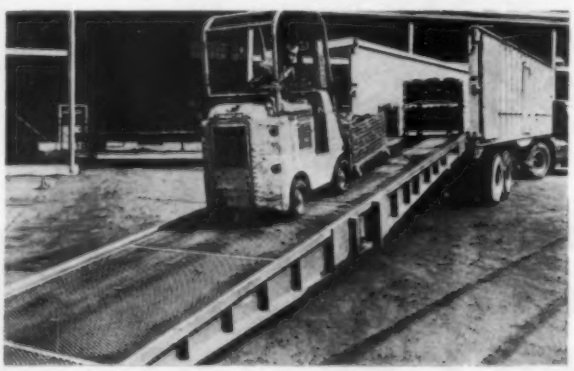
Compare our Tandem Axle Trucks with front wheel drive, 10 forward speeds, overdrive and new mud and snow tires with similar equipment elsewhere.

Investigate now! . . . There's no obligation . . . and we deliver on approval!

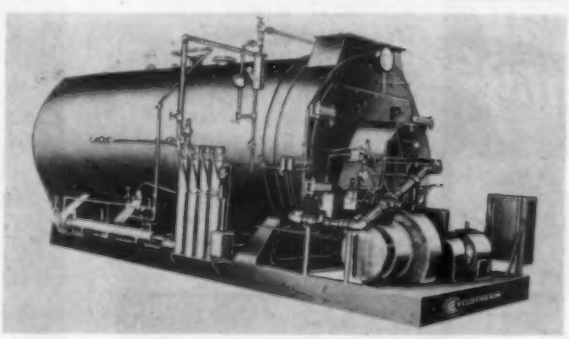
For Specifications, Prices, Delivery Write, Wire or Phone Collect—JAckson 5-7841
MILTON Y. TOOMBS, JR.
Sales Manager

MEMPHIS EQUIPMENT Company
CONSTRUCTION AND AUTOMOTIVE EQUIPMENT AND PARTS
766 SO. THIRD ST. MEMPHIS, TENNESSEE

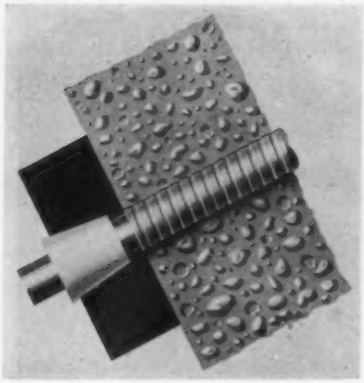
• Lamson Mobilift Corporation has announced a new side shifter attachment, available for its line of stand-up and sit-down industrial trucks. Simplified design provides a full eight inches of travel. Full length bronze wear plates which replace anti-friction bearings provide a full length bearing surface, adding very little to the length. **(104)**



• This portable yard ramp, manufactured by the Magnesium Company of America, can be moved into position without aid of powered equipment. A lift truck carries material from the trailer bed directly to the scale in one quick operation. **(105)**

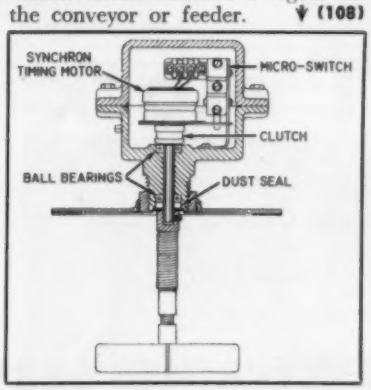


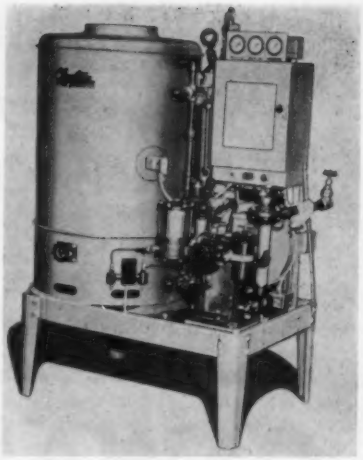
• A 750 hp. package steam generator, the largest model manufactured by the Cyclotherm Division, U. S. Radiator Corporation, reportedly delivers 26,000 lb. of steam per hour at over 80 percent efficiency. Because of the patented Cyclonic Combustion principle incorporated in its design, the new unit is no larger than most 500 hp. package generators. The boiler, known as the Cyclotherm C-26,000, can be adapted to burn either LPG or light oil. **(106)**



• Stressteel wedge tensioning units, manufactured by the Truscon Steel Division, Republic Steel Corporation, provide a simple, efficient method of quickly anchoring a bar against a steel bearing plant in pre-tensioning. The wedge, easily seated in the tapered hole in the wedge plate, firmly grips the bar with sharp buttress-teeth, forming a positive anchorage with no slippage. Advantages claimed for the new wedge include close length tolerances in concrete and steel fabrication and the elimination of threaded bars. **(107)**

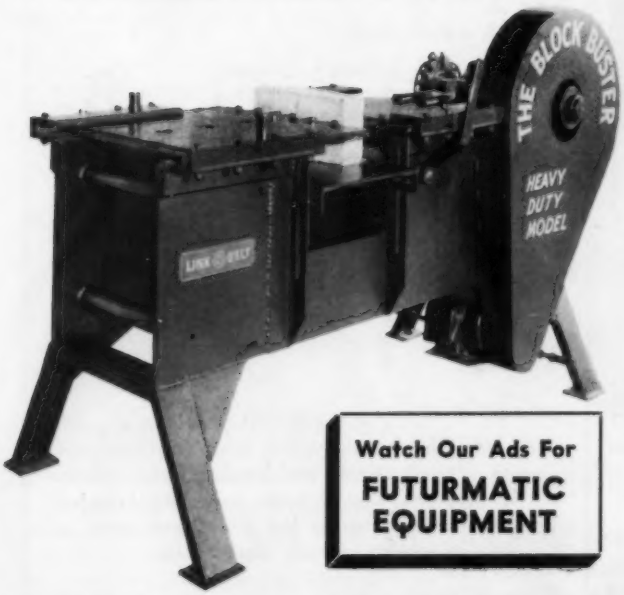
• A new explosion-proof Roto-Bin-Dicator for use in hazardous atmospheres has been developed by Bin-Dicator Company. Designed to indicate or control the level of any bulk material that will flow, it is particularly suited for application on bins under pressure or vacuum. A low torque motor, located in an explosion-proof housing, rotates the paddle at slow speed. Material building up to the Roto-Bin-Dicator stops the rotating paddle and stalls the motor. As the motor stalls, the torque of the motor actuates a Micro switch which controls a signal on the conveyor or feeder. **(108)**





• Clayton Manufacturing Company's forced-circulation generator with balanced-feed design is now available in an increased horsepower rating. In addition to the 15 hp. models, the generator may now be obtained with a 30 hp. rating. Normal steam output is 1,035 lb. per hour. The generators, useful in the curing of concrete block, are designed with a pressure of 200 lb. per square inch. **(109)**

The Block Splitter YOU asked for!



Watch Our Ads For
FUTURMATIC EQUIPMENT

We surveyed you, the producer, and found what qualities you wanted most in a block splitter. Thus THE BLOCK BUSTER is built to your specifications.

- **MAXIMUM CAPACITY:** Cuts per minute limited only by skill of operator. It is impossible to feed machine to splitting capacity.
- **MINIMUM CULLS:** Cushioned stroke practically eliminates culls.
- **RUGGED CONSTRUCTION:** Built like a battleship. Mechanical action—No air or hydraulics.
- **VERSATILE:** Splits solid & cored block. Adjusts quickly & easily to any height or angle.
- **REALISTICALLY PRICED:** 18" model $1695.00, 26" model $2295, fob Factory.
- **SOME AVAILABLE FOR IMMEDIATE SHIPMENT**

ROY DARDEN INDUSTRIES, INC.

P. O. BOX 95, NORTHSIDE STATION, ATLANTA, GA.

You'll be "BLOCKS AHEAD" of competition

. . . making

BIGGER PROFITS

and

BETTER BLOCKS

with the new

OSWALT BLOCK MACHINE

Operators using the new OSWALT Block Machine now find it easy to make uniform quality, accurately sized blocks at a lower cost than ever before.

ONLY OSWALT offers these original, patented features, all combined in one complete machine:

- Shock-free block ejector and front-end pallet feeder.
- Simplified height and density control.
- Improved vibration and speed-up system.

Write for our new Brochure No. H-55

OSWALT ENGINEERING SERVICE CORP.

1335 Circle Ave., Forest Park, Ill. • Phones: EStebrook 8-4664 (Chicago) • FOrest 6-2798 (Suburban)

Dur-O-wal preserves beauty, adds structural soundness and prevents cracking.

Trussed Design

Butt Weld • Deformed Rods

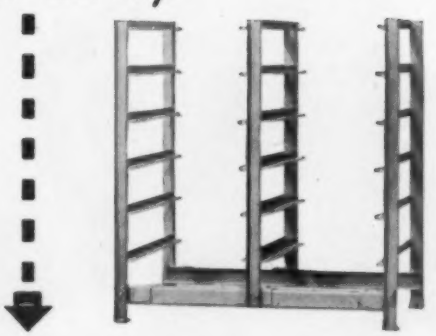
DUR-O-WAL®

Phone, wire or write Dept. 2S today for complete dealer information . . . . you have a market for Dur-O-waL in your town. Act now.

Dur-O-wal Div., Cedar Rapids Block Co., CEDAR RAPIDS, IA. Dur-O-wal Prod., Inc., Box 628, SYRACUSE, N.Y. Dur-O-wal of Ill., 119 N. River St., AURORA, ILL. Dur-O-wal Prod. of Ala., Inc., Box 5446, BIRMINGHAM, ALA. Dur-O-wal Prod., Inc., 4500 E. Lombard St., BALTIMORE, MD. Dur-O-wal Div., Frontier Mfg. Co., Box 49, PHOENIX, ARIZ. Dur-O-wal, Inc., 165 Utah St., TOLEDO, OHIO

CHASE BLOCK RACKS, PLAIN STEEL PALLETS

Your best buy



Here's why . . . Standard style or specially designed, Chase racks meet your requirements. They're shipped painted and knocked down—assembly is easy—no special tools or welding needed. Chase experience means low prices and years of dependable service. Check Chase prices.

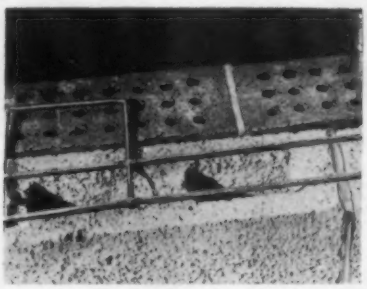
Chase FOUNDRY & MANUFACTURING CO.

3300 PARSONS AVENUE • COLUMBUS 7, OHIO

• Special fork lift trucks, designed and built by the Champ Corporation, El Monte, Calif., for towing to the job behind the delivery truck or semi-trailer, have enabled many block producers and contract haulers to cut delivery time in half. After loading the palleted block in the yard, the fork lift is quickly hooked on behind the delivery truck and trailed along to the job. In less than a minute it again goes to work unloading the blocks and placing them wherever desired, even up on high scaffolds. (110)

• The first building in Lorain County, Ohio, to be constructed by the tilt-up slab method is this one-story, 130 ft. by 70 ft. structure at Elyria. It will consist of 16 poured sections. The slabs, ranging from 8 to 10 tons each, were installed by this 15-ton Lorain 26 crawler crane. (111)

• Elevations to 20 ft. at 30 deg. are now possible with the new 40-ft. Concrete Special recently added to the American Conveyor Company's Con-Vay-It line of conveyors. This unit pours approximately 1 cu. yd. per minute in the horizontal position. The addition of a High-Boy elevating device permits side movement when pouring forms. (112)



• "Econo-Lok" masonry reinforcement has been designed by the A A Wire Products Company as a substitute for headers. "Econo-Lok" consists of two parallel reinforcing rods to which rectangular ties are flush-welded on 16-in. centers. An important advantage claimed for the new reinforcement is that both back-up and veneer of equal thickness on a wall can be reinforced horizontally. (113)

PRASCHAK 50 CU. FT. MIXER

AMERICA'S POPULAR MIXER

(DRIVE GUARD REMOVED FOR PICTURE)

CAPACITIES:

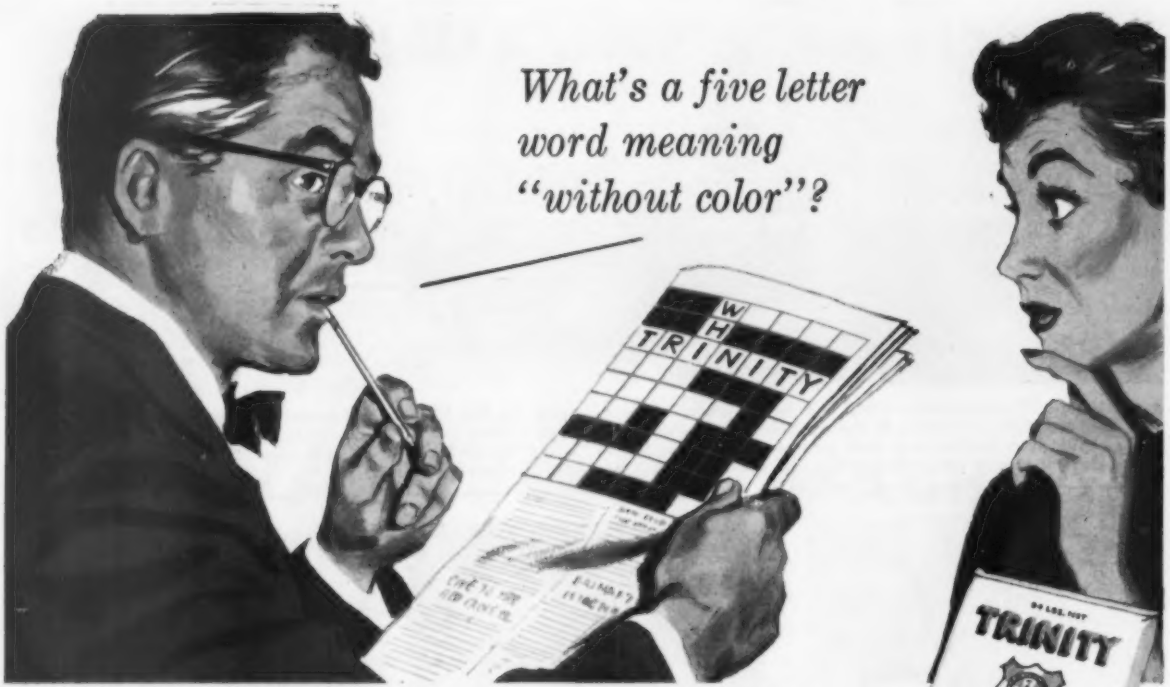
8 cu. ft. . . . . $ 680.00
16 cu. ft. . . . . $ 900.00
21 cu. ft. $1015.00
30 cu. ft. $1430.00
50 cu. ft. $2630.00

(Compare the Mixer, not the Price)

"The Mixer that Can Take It"
Available from stock.
With Motor, Motor Mount, Drive, completely assembled.

—CALL 1368-J (COLLECT) FOR ADDITIONAL INFORMATION—

PRASCHAK MACHINE CO. MARSHFIELD, WIS.



TRINITY WHITE The whitest white. A true portland cement that combines high quality and superlative beauty in concrete work. The extreme whiteness gives truer colors when pigments are added. Meets all Federal & ASTM specifications.

As white as snow ... plain or waterproofed

A Product of GENERAL PORTLAND CEMENT CO. • Chicago • Dallas • Chattanooga • Tampa • Los Angeles

---

for handling
CONCRETE PRODUCTS

Tufhorse KANT-RIP

HAND PADS
GLOVES
MITTENS

Heavy Split-Cowhide Hand Pad No. 308. Tie back $7.80 per dozen pairs.

Made from the finest cowhide, Tufhorse gloves, hand pads and mittens are comfortable to wear, provide real protection for your hands.

ORDER SAMPLE PAIRS AT "PER DOZEN" PRICES

DES MOINES GLOVE & MFG. CO.
DES MOINES, IOWA

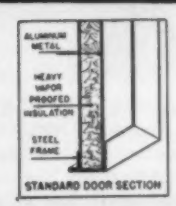
SAVE FUEL • REDUCE CURING TIME
CUT COSTS • UP PROFITS
with *Standard* KILN DOORS!

WHERE AISLE SPACE IS LIMITED STANDARD sliding doors need no aisle space. The carrier-type door (shown) requires 15" minimum clearance above top of door opening. A vertical sliding door, counterweighted for easy opening, is also available.

WHERE HINGE-TYPE DOORS ARE PREFERRED Choose from two STANDARD hinge-type doors. The top-hinging door (shown) can be used when there's insufficient room at sides of door. The conventional side-hinging door has rugged hinges and positive-seal lock.

CHECK THESE FEATURES

- √ Heavy Aluminum Sheets on Both Sides of Thick Vapor Proofed Insulation.
- √ Rugged Steel Frame.



Get the Best — Send for Details Now
STANDARD DRY KILN COMPANY
P. O. BOX 5708 . . . . INDIANAPOLIS 21, IND.

New Literature

The Rexon "K" Gasket, a new type rubber joint for coupling standard small diameter bell and spigot concrete sewer pipe, is fully illustrated and described in a brochure recently released by the *Hamilton Kent Manufacturing Company.* Method of application is explained. **(114)**

Samples of Mapico synthetic, lime-proof, light-fast colors for use in concrete, mortar, plaster, and stucco are contained in a folder available from the *Mapico Division, Columbian Carbon Company.* Suggestions for achieving the best results with Mapico colors are given. **(115)**

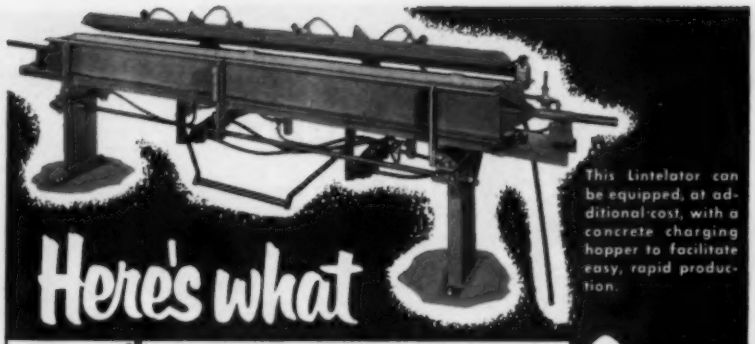
Functional advantages of the White 3,000 Util-I-Deck truck are described in a folder just released by *The White Motor Company.* The new unit incorporates the White 3000 cab with a special body developed for the handling of concrete block, concrete pipe, prestressed concrete members, etc. **(116)**

"How Precision Control Gives You Better Concrete" is the title of a brochure published by *Scientific Concrete Service Corporation.* Precision controlled concrete is concrete that is proportioned and mixed with equipment and batching methods so accurately that it conforms to the mix design with extremely close tolerances. **(117)**

Outstanding boiler installations around the world are described in a bulletin released by the *Cleaver-Brooks Company.* Advantages of the newly introduced Progress packaged boiler, which was designed for commercial heating up to 1,340 B.T.U. per hour, are also described. **(118)**

A shock-free block ejector and a front-end pallet feeder which simplifies operation of the block machine are featured in the latest bulletin offered by the *Oswalt Engineering Service Corporation.* Services available for use on existing cam operating machines are included. **(119)**

A complete line of Rotrtwist spiral fluted carbide masonry drills has been introduced by *Star Expansion.* Designed for use on all types of masonry for any type of fastening, the Rotrtwists can be used with any standard ¼ in. or ½ in. electric drill. **(120)**



This Lintelator can be equipped, at additional cost, with a concrete charging hopper to facilitate easy, rapid production.

Here's what

Says about their KENT LINTELATOR

VIRGINIA DUNBRIK COMPANY
INCORPORATED

MANUFACTURERS OF THE LYNCHBURG BLOCK AND CONCRETE ARTS

April 3, 1956

The Kent Machine Company
Cuyahoga Falls, Ohio

Attention: Mr. Daniel Urban

Dear Sir:

Many thanks for the helpful service rendered by the Kent representative, Mr. Carl Morrell.

It might be worth something to someone to know our experience with our Kent Lintelator. First, during this companys twenty years in business we have been making only block, concrete-type brick and lintels. About three years ago we were forced to improve our lintel operation and came upon the Kent Lintelator.

Now after three years of continuous operation we give you our reason why you cannot get it back. One operator alone mixes and makes more than fifty lintels in an eight hour day on our Lintelator. These are better lintels - both true and good texture. This Kent Lintelator has practically no maintenance and our operator would never consent to reverting back to the old method of making lintels.

Needless to add, the Virginia Dunbrik Co., Inc. has found the Kent Lintelator a very good and most profitable addition giving us a stock of lintels to meet the demand.

In appreciation you may use this company as a reference and invite your prospects to visit here and see and talk with the Lintelator operator.

Very truly yours,

VIRGINIA DUNBRIK CO., INC.

A. Kendall Sydnor
Sec., Treas.

BETTER LINTELS... TRUE & GOOD TEXTURE

•

PRACTICALLY NO MAINTENANCE

•

WOULD NEVER CONSENT TO REVERTING BACK TO OLD METHOD OF MAKING LINTELS

•

A VERY GOOD AND MOST PROFITABLE ADDITION TO MEET THE DEMAND FOR LINTELS

INVITE YOUR PROSPECTS TO VISIT HERE AND TALK WITH THE LINTELATOR OPERATOR

You, too, can profit by the experience of Virginia Dunbrick Company.

A glance at their statement above is convincing proof that a Kent Lintelator is a definite money producing asset in any block plant today. Some plants have several in operation every working day.

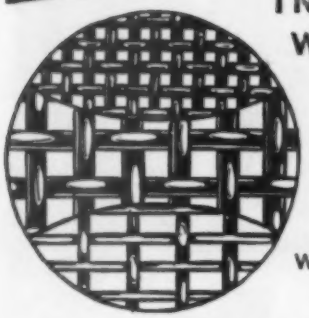
You'll doubtless find a worthwhile market for lintels through the customers you are now selling.

Act now when the opportunity is "ripe" and ask us for the complete, interesting "Lintelator" story.

The KENT MACHINE CO. CUYAHOGA FALLS OHIO
DIVISION OF THE LAMSON & SESSIONS CO.
CONCRETE PRODUCTS MACHINERY SINCE 1925
Canadian Distributor: Wettlaufer Equipment, Ltd., 49 Merton St., Toronto 12, Ontario

Industry has
A WORLD OF CONFIDENCE

IN NAT-ALOY
WIRE CLOTH



COVERS EVERY REQUIREMENT

. . . for a dependable, long-wearing, non-crystallizing Screen Cloth. Has "Nat-Aloy" Lock Crimp Meshes. Preferred for screening accuracy, economy and serviceability. All Sizes —All Meshes—All Gauges.

Write for Catalog No. 55
ALSO STAINLESS STEEL
WIRE SCREENS

WE OFFER NOW . . .
SUPER NAT-ALOY
OIL TEMPERED WOVEN WIRE CLOTH

★ GREATER RESISTANCE TO ABRASION.
★ MORE TONNAGE AT LOWER COST.
★ FEWER COSTLY CHANGE OVERS.

AVAILABLE IN FLAT SURFACE, LOCK CRIMP, DOUBLE CRIMP AND RECTANGULAR OPENINGS.
ALSO LONG SLOT SCREENS.
PROMPT SHIPMENT —
WRITE OR PHONE

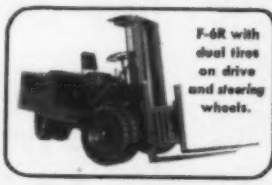
NATIONAL WIRE CLOTH CO., INC.
St. Paul, Minn.

Erickson Pioneered CUBING

New Superior Features Still Make
Erickson F-6R THE IDEAL TRUCK FOR THE CONCRETE INDUSTRY

Erickson Fork Trucks have a proven 30-year record for low-cost handling of concrete block cubes in the yard — stock-piling, loading and unloading delivery trucks.

New twin cylinder mast construction assures full operator vision • new 12" clutch with Timken combination drive axle and transmission • new high H. P. engine, easily accessible with tip-up hood. Large 8:25x15 tires provide easiest rolling and surest traction (*all* tires interchangeable.) Available with forged steel flat forks or Jalloy No. 1 cubing forks. *WRITE FOR LITERATURE!*

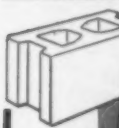

F-6R with dual tires on drive and steering wheels.

"THE WORKHORSE OF LIFT TRUCKS"

ERICKSON
POWER LIFT TRUCKS, INC.
225 St. Anthony Blvd. N. E.
Minneapolis 18, Minn.

NR
Plastic

1 TABLESPOON OF DRY POWDER Per Bag of Cement Produces
Greater Plasticity
IN THE GREEN UNIT *Plus*
20% Lighter Color
COST—½¢ *per Bag of Cement!*



Edick LABORATORIES

427 W. National Ave.
Milwaukee 4, Wisconsin

CARPENTER 1-Man Delivery Rig

Boosts Profits making SEPTIC TANKS

Satisfied customers from coast to coast rely on CARPENTER Forms and Equipment for profitable production of Septic Tanks. Top quality units made fast and economically. Only one man required to handle our delivery rig.

Write for complete details.

CARPENTER MANUFACTURING CO.
Harvie Road • Carrier 94 • Box 470 • Phone 2-8938 • Richmond 23, Va.

CINDERS

Carload Shipments

Large Dependable Source of QUALITY PRODUCT

Our many customers rely on CINDER SHIPPERS for a premium product meeting all specifications.

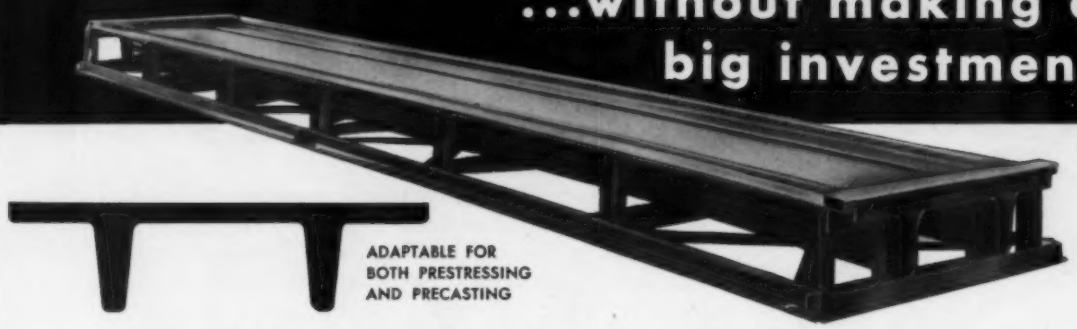
We supply cinders that are uniform in color . . . free of staining causes . . . low in combustible matter . . . consistently sized.

CLEANED
SCREENED
CRUSHED
(Half inch down to powder)

Steady shipping schedules
Mention railroad delivery

CINDER SHIPPERS, Box 495, Chester, Pa.

Get Into Profitable Precast Business ...without making a big investment



ADAPTABLE FOR BOTH PRESTRESSING AND PRECASTING

It's not necessary to invest money in concrete beds, expensive equipment and plant facilities to manufacture prestressed double tee slabs. A big sales potential is for span ranges of 20 to 40 feet, for which prestressing is not needed—for which precast members are most advantageous.

Low-cost, portable Atlas Cambered Steel Forms enable you to quickly and simply precast your slabs with lightweight concrete. A small investment puts you in a business with a tremendous market.

Get the story.

Consult Us Before Buying Forms for Prestressed or Precast Concrete

IRVINGTON FORM & TANK CORPORATION

Manufacturers of Forms for Prestressed and Precast Concrete
Dept. CM, 20 Vesey Street New York 7, N. Y.

Hot Off the Press!

1956 *Edition*

CONCRETE INDUSTRIES YEARBOOK

ONLY $2.00 PER COPY

Send name and address on your company letterhead to

PIT & QUARRY PUBLICATIONS, INC.
431 S. Dearborn St. • Chicago 5, Ill.

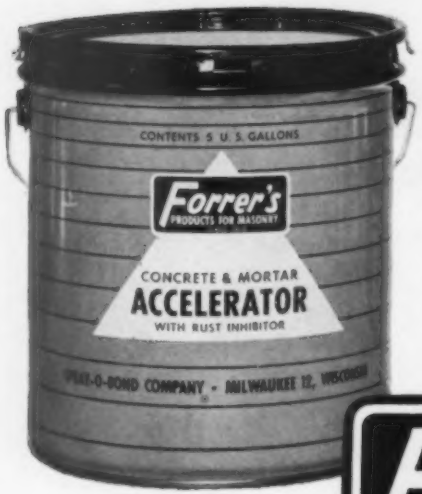
(Sent postpaid if check accompanies order)

Supply Limited — Order Now!

Lay Brick and Concrete Blocks at 20° above zero

Forrer's Accelerator

for Concrete and Mortar



Now, with Forrer's new Accelerator, for Mortar and Concrete, you can lay blocks safely down to 20°F. For, this newly improved Accelerator actually lowers the freezing point of the water in the mix and speeds up setting time. Forrer's Accelerator increases strength and workability; brick mortar becomes easier to work; concrete easier to pour. Result: extra jobs and no delays in below freezing weather.

Solves Freezing Weather Worries

Solution is available in handy 1, 5, 30 and 55 gallon drums. Rust inhibitor added prevents it from affecting reinforcing steel or tools.

DEALER'S WANTED!

Attention Concrete Block manufacturers— For extra sales — sell Forrer's Accelerator. Stock up now for cold weather.

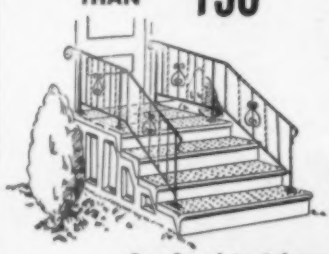
— Attractive Territories available for Distributors —

Forrer's
PRODUCTS FOR MASONRY
SINCE 1926

FORRER'S — Division of SPRAY-O-BOND CO.
2225 N. Humboldt Ave., Milwaukee 12, Wis.

NOW MORE THAN **150** LICENSED MANUFACTURERS Producing Patented

homeward ®
Concrete STEPS



A Small Investment That Pays Big Dividends

Homeward all metal forms are precision built to produce a product that requires no hand finishing.

The exclusive franchise for your territory may still be open.

For Complete Information Write
ROGER F. WILLIAMS, Licensor
3420 S. W. 9th St. Des Moines (15), Ia.
® homeward is a Registered TRADE MARK

DEPENDABLE FOR 60 YEARS
ALLOY
Woven Wire
SCREENS
TWIN CITY IRON & WIRE CO.
St. Paul, Minnesota

For Fast Results . . .

▼

ADVERTISE YOUR

USED EQUIPMENT IN

THE CONCRETE MANUFACTURER'S

CLASSIFIED SECTION

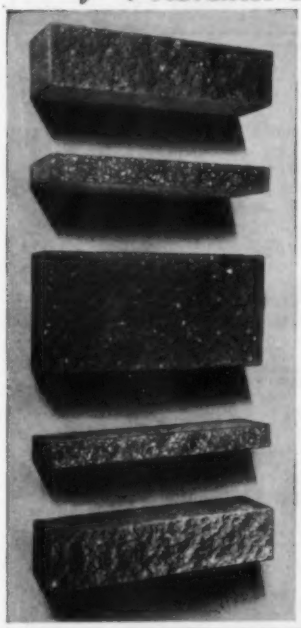
▲

"The Marketplace of the Industry"

BES-STONE *Split Block* MAKES the Difference

* Advances architectural design and beauty

* BOOSTS YOUR PROFITS!



Automatic operation — 960 Split Block per Hour

+ Add a BES-STONE BLOCK SPLITTER to your plant NOW

You'll find it full of profit-opportunity because the trend toward BES-STONE Split Block is strong! Architects, contractors, owners WANT this beautiful, modern, colorful "quarried stone" effect that is so ideal for all structures . . . commercial, institutional, residential. BES-STONE Block Splitter makes straight line cuts . . . no cull block. Automatic hydraulic operation . . . up to 960 Split Block per hour . . . safe, quiet . . . a big money maker!

Write for BES-STONE Bulletins 95A and 100

BES-STONE *the Split Block with Character*

BESSER COMPANY • Complete Equipment for Concrete Block Plants • Alpena, Michigan, U. S. A.

A 8008-¼-H

SIDE-O-MATIC

Cleveland Builders Supply Company, a leader in the industry, now have 3 Side-O-Matics in their fleet

Photo shows cubes loaded by squeeze-type fork are no longer an unloading problem

PARTIAL LIST OF SATISFIED USERS:

Foster Builders Supply Company
Port Huron, Michigan

Alico Concrete Products Co., Inc.
Patchogue, L. I., New York—2 units

City Cement Blocks Co.
Bridgeport, Connecticut—3 units

The Ideal Builders Supply and Fuel Co.
Cleveland, Ohio—2 units

Apex Coal and Supply Co.
Cleveland, Ohio

Binkley and Ober, Inc.
East Petersburg, Pa.—2 units

The Michigan Silo Company
Peoria, Illinois—2 units

Joseph M. Ripley, Inc.
Jacksonville, Florida—3 units

Pick's Pack-Hauler
Blue Hill, Nebraska

Schenectady Cast Stone Co., Inc.
Schenectady, New York

Raymond W. Bartlett
West Creek, New Jersey

Concrete Masonry Corporation
Elyria, Ohio—4 units

Fizzano Brothers, Inc.
Crum Lynne, Pennsylvania

Maule Industries, Inc.
Miami, Florida—2 units

South Hammond Concrete Products Co.
Hammond, Indiana

Flower City Builders Supply Corp.
Rochester, New York

Nitterhouse Concrete Products
Chambersburg, Pennsylvania

Marquart Concrete Block Company
Waterloo, Iowa

The Plasticrete Corporation
New Haven, Connecticut—2 units

The Cleveland Builders Supply Co.
Cleveland, Ohio—3 units

Putnam Mason Supplies, Inc.
Carmel, New York

Tait Block and Supply Company
Port Huron, Michigan

Daggett's Concrete Products
South Haven, Michigan

Fairlawn Supply and Coal Company
Akron, Ohio

Polyock Brothers
Zenda, Wisconsin

Atlas Concrete Products, Inc.
Flint, Michigan—2 units

Allen County Concrete Products
Lima, Ohio

Meakins, Inc.
Hollywood, Florida—4 units

Carl Krebs
Fort Thomas, Kentucky

Picone Brothers
Farmingdale, Long Island, New York

Lima Cement Products Company
Lima, Ohio

Peoria Concrete Construction Co.
Peoria, Illinois

M. L. Dague Co.
Muncie, Indiana

Columbia Concrete Products Co.
Des Moines, Iowa

Iowa Concrete Block and Material Co.
Des Moines, Iowa

Bestone Incorporated
Chardon, Ohio

New Castle Duntile Company
New Castle, Pennsylvania

R. I. Lampus Co.
Springdale, Pennsylvania

Park Avenue Cement Block Co., Inc.
Cranston, Rhode Island

Bes-Block Concrete Products, Inc.
Jacksonville, Florida—3 units

Adolf Jandris & Sons, Inc.
Gardner, Massachusetts

SIDE-O-MATIC UNLOADER CORP.

P. O. Box 1561, York, Pa. • Phone York 7357

Concrete Manufacturer Classified Section

431 S. DEARBORN ST., CHICAGO 5, ILL.

Advertising Rate Per Issue: $12.50 a Column Inch. Lower Rates on a Contract Basis — Write for Rate Card.

FOR SALE
BERGEN TRI-MATIC BLOCK MACHINE

•

Front Pallet Feeder, Zeromatic Control, and Offbearing Hoist, used less than 11 months.

•

Box CM-1182, c/o THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

WANTED SUPERINTENDENT

Wanted by a substantial company now producing concrete masonry building units, a superintendent to take charge of designing, building and operating an additional plant in which all types of pre-cast structural shapes will be produced.

Exceptional opportunity for the right man.

In making application, please state experience and salary desired.

Box CM-1172, c/o Pit & Quarry Publications
431 S. Dearborn St. Chicago 5, Ill.

FOR SALE

Complete block plant, capacity 1500 blocks hourly. Complete with all equipment, rolling stock includes 15 trucks and tractor-trailer rigs. 1955 sales over $450,000. Buildings, 6 acres ground, RR spur track, all assets included. Located in Ohio city of 50,000. Owners retiring. Priced at $600,000. Terms 20% down to reliable purchaser.

DILGARD REALTY CO.
78½ E. MAIN ST. ASHLAND, OHIO
Phone 3-2324

FOR SALE

Concrete Plant. Manufacturing precast troughs, cisterns, septic tanks, etc. Doing good business with opportunity for enlargement. Well located, wonderful climate. Can be bought reasonably.

BOX CM-9112, c/o THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

WANTED

300—18" x 20" x ¼" Steel pallets
1—Good used platform Truckman 2000 lbs. capacity
1—45' or 50' Enclosed elevator for unloading bulk cement

CHERRYVILLE CONCRETE PRODUCTS CO.
North Pink St. Cherryville, N. C.

WANTED

16x16 and 16x20 Multiplex Chimney Block Pallets. Must be for square flues and have lightweight walls.

Vertes & Sons Lumber & Coal Co.
Taylor Center, Michigan

FOR SALE

Concrete drain tile plant; modern, new equipment, unlimited opportunities. In Minnesota.

Box CM-1142 c/o THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

WANTED IN FLORIDA

Plant manager for small but growing pipe plant. In reply state age, full outline of experience (pipe and otherwise) and salary requirements.

JOELSON CONCRETE PIPE CO
VENICE, FLA.

LOWER COST
packer-head wings
Proved to last as long or longer — yet cost considerably less. Write for prices.
TEXAS FOUNDRIES
LUFKIN, TEXAS

unbreakable
PALLET RINGS
Write for full information
TEXAS FOUNDRIES
LUFKIN, TEXAS

FOR SALE

1 L-2 LITH-I-BLOCK machine with automatic pallet return
1 10 H.P. Air Compressor
1 30 Cu. Ft. Multiplex mixer
1 30 Cu. Ft. Lith-I-Skip inclined type
54 72-block steel racks
1440 New ¼" x 18 x 22 steel pallets
2000 Used 5/16 x 18 x 22 steel pallets
Extra mold boxes and attachment to make all sizes blocks. Also brick.

All in good condition, reasonably priced. May be inspected at our St. Louis plant.

ROCK HILL QUARRIES COMPANY
1233 No. Rock Hill Rd. St. Louis 17, Mo.

CEMENT COLORS

All shades and grades the highest quality. Write for color cards, prices and samples

RICKETSON MINERAL COLOR WKS.
MILWAUKEE 2, WISCONSIN
Established 1885

FOR SALE

Stearns Model "50" Automatic Plain Pallet Block Machine.
1—No. 9 Jolterete block machine, pallets and racks. Extra mold boxes & motors.

GUY D. MOODY
P. O. Box 852 Bristol, Va.

WILL PURCHASE

I have been commissioned to purchase complete ownership or controlling interest of plant manufacturing 1,500 barrels or more per day of cement. Any location.

P. C. CUNNINGHAM
REALTOR
Box 128, Erie, Pa.

FOR SALE

Due to expansion, we offer for sale a Stearns Model 50, complete with mold boxes, attachments, mixers, and other equipment.

CONCRETE BLOCK & SUPPLY CORP.
215 S. Main St. Phone 680 Jasper, Ind.

MINERAL COLORS
for
BRICK MORTAR
STUCCO-PLASTER-CONCRETE
"Fine Because of Their Fineness"
Ask for samples and recommendations.
BLUE RIDGE TALC CO., INC.
HENRY, VIRGINIA

HIGH PROFIT LOW COST

Easy Stripping Metal Molds
•
Send for Free Bulletin

Here is a real money maker for that last bit of good cement from your mixer. Our completely new basement window sill fits 12" and 20" standard basement windows for 32" wall opening, @ $10.00, less 10% discount for ten or more. F.O.B. in lots of 10 they may be mixed for 8" wall 10" & 12" wall.

PARK MOLD & STEP CO.
1020 N. Raymond Rd. Battle Creek, Mich.

FOR SALE

1—Columbia No. 12 Block Machine with 4", 6", 8", 10", 12" and Chimney Block Attachments.
1080—Plain Steel Pallets
30—Steel Block Racks
1—Model M-1LH Columbia Mixer
1—Quincy Air Compressor Model 325

$17,500.00 Complete

This equipment is in perfect mechanical condition having been used only 10 months.

WEST ALLIS CONCRETE PRODUCTS CO.
8704 West Schlinger Ave.
Milwaukee 14, Wis.

USED TRUCK MIXERS

3 yd. Jaeger Truck Mixer W/Challenge Rear End $1,500.00
3-4 yd. Rex Truck Mixer 1,000.00
2 yard Ransome Truck Mixer 400.00
2 yard Rex Truck Mixer 800.00
3 yd. Jaeger Truck Mixer—We have 3 of these @ ..... 800.00 ea.
3 yard Jaeger W/ Challenge Rear End ..... 2 @ 1,500.00 ea.
2½ yard Jaeger W/Challenge Rear End Mounted on 1940 K7 Int. 1,500.00
2 yard Ransome on G.I. 4x6 ..... 1,000.00
2-3 yard Rex 1,000.00

ANDREWS EQUIPMENT SERVICE
126 S. Walnut Spokane 43, Wash.
RI - 7-1066

FOR SALE

Fleming #180 Block Machine and #12 Mixer. 4-6-8-10 and Chimney Block Molds. Appr. 1200—8" and 700—10" Plywood Pallets. Also 8" Belt Conveyor. Fair Condition. Make offer.

OTTAWA VIBRA-BLOX
Rt. 1 Ottawa, Ill. Phone 2669

FOR SALE

New type of Hydraulic Automatic Stone Making machine up to 15000 a day. Proven and completely satisfactory in production. Write for particulars.

TRANSATLANTIC MACHINERY CO.
155 King St. E. Toronto Ont., Canada
Phone EM. 4-5816

COLORS *For Cement and Concrete*

COLOR YOUR CONCRETE WITH LANSCO CEMENT COLORS, available in 40 ATTRACTIVE shades. Suitable for all types of concrete products. Write for our new color card, copy of "Suggestions For Using Cement Colors", and for free samples and price list.

Manufactured by:
LANDERS-SEGAL COLOR CO.
71 Delavan St. • Brooklyn 31, N. Y.

FOR SALE

Fleming 180 Automatic Block Machine with 4" & 8" attachments, 15 Cu. ft. mixer, Fleming skip hoist, hand truck, racks, 1300 pallets. Excellent condition.

JENNINGS READY-MIX, INC.
40 Woodlawn Ave. Norwalk, Ohio

WATERBAN 21
PROTECTS POROUS MASONRY

A silicone-base transparent waterproofing that protects the surface and retains the natural beauty of the structure.
Write for Price Lists.

LAMBERT CORPORATION
HOUSTON, TEXAS · ORLANDO, FLA.

BUILD GOOD WILL

ADVERTISING NECESSITIES FOR THE BLOCK INDUSTRY. LINE PINS, TWIGS, CORNER BLOCKS, CALCULATORS.
Complete Catalog on Request.
GERSON CO.
97 Doering Rd.
MATTAPAN 26, MASS.

FOR SALE

Turk-Mackenzie pipe machine complete with mixer. Makes four foot pipe through 24" inch. Jackets and pallets for 12", 15", 18" and 24". Both tongue and groove and bell and spigot. Machine now in use.

JOHNSEN CONCRETE PIPE CO., INC.
7211 Lawndale Houston 12, Texas

FOR SALE

Fork and platform power lift trucks, used and guaranteed factory rebuilts.

ERICKSON POWER LIFT TRUCKS, INC.
Saint Anthony Blvd. & University Ave. N.E.
MINNEAPOLIS 18, MINNESOTA
Phone—Sterling 1-9508

PLAIN PALLET CLEANING

We truck our machine to your plant and supervise entire cleaning and planing off of pallet residue. No need to shut down as we will keep up with production.

EDWARD A. LOBSTEIN
5363 Seminole Ave. Detroit 13, Mich.
Phone: Walnut 2-1188

FOR SALE

One Multico Block Machine
One Mixer, 30 foot
One Off-bearer, Electric
48 Racks, 72 Block
1800 Pallets, Steel ¼x18x18
Miscellaneous Molds
TERMS

Please address inquiries for this equipment to
Richard C. Spady
c/o Vibrated Concrete Products
5855 North Pecos • Denver, Colo.

METAL MOLDS & VIBRO—TABLES

Splash-Blocks • Step Treads
Window Wells • Dist. Boxes
Chimney Caps • Wall Cap
Lawn Trim • Stepping Stones

BAR-X
BAR-B-Q and INCINERATOR UNITS

Special Molds Made to Order!

Write Today.. **SPILLMAN MFG. CO.**
Box 534, Station G
Columbus, Ohio

WITTEMANN MACHINERY COMPANY
FARMINGDALE, NEW JERSEY
Specialists in Concrete Products Equipment
Eastern Representatives of the
COLUMBIA MACHINE WORKS, Vancouver, Washington

Plant Design Layout Machinery Block
Elevators Bins Conveyors Feeders

PLAIN STEEL PALLETS

Guaranteed Quality
Flat • Square • Accurate
GARY STEEL SUPPLY COMPANY
2300 S. Springfield Ave.
CRawford 7-2525 Chicago 23, Ill.

CONCRETE BLOCK MACHINE FACTORY RECONDITIONED

FMC-180, plain pallet block machine, guaranteed. Comes complete with motors and mold box. Capacity 1400 blocks daily. $2750.00. Financing available.

FLEMING MANUFACTURING CO.
CUBA, MISSOURI

STEAM CURING MACHINERY & EQUIPMENT

Autoclaves
Quick Opening Doors
Silencers,
Exhausters,
Temp. & Press.
Recording Meters

SHORE ENGINEERING
322 BROADWAY
NEW YORK 7, N. Y.

Kiln Doors & Carriers
Insulated Concrete Roof Planks
Steam Boilers,
High & Low Press.
Dryers

SWAP — SELL — BUY

BLOCK MACHINES

Stearns #7 & 9 Jolterotes ..... $300.00 each
(Jolterote owners at this price buy one for spare parts.)
Mold Boxes #7 & 9..... 150.00 each
1—12 cu. ft. Kent Mixer with motor... 450.00
1—18 ft. Stearns Skip Hoist..... 450.00
1—George 25 cu. ft. Concrete Mixer... 750.00
1—Continuous Mixer 150.00
2—Air Offbearers Stearns #7 & 9.... 250.00 each
2—Hand Lift Trucks..... 175.00 each
100—Racks for cored steel pallets..... 10.00 each
100,000 pressed steel pallets in stock (Send tracing or sample for quotation).

WRITE • WIRE • PHONE
Mr. McCaughey

Send in list of equipment you need. If we don't have it in stock, we usually know where we can find it at a bargain.

GENERAL ENGINES CO., INC.
Route 130 Thorofare, N. J.
Phone: Tilden 5-5400

THE MOST POWERFUL truck-man YET!

THE Y-60
WITH
STANDARD POWER STEERING

ENGINEERED FOR RUGGED DUTY OUTDOORS WITHOUT OPERATOR FATIGUE. HIGHLY MANEUVERABLE UNDER ALL CONDITIONS.

Truck-man scores again with a heavy duty, versatile, time saving Powerhouse on Wheels • 6 cylinder—73 h.p. Industrial Engine. Oversize Brakes and Clutch • Welded All-Steel Frame • Extra Heavy Transmission Wide Tread, 12 ply load tires • Speeds to 20 miles per hour, forward and reverse • Mast tilts 10° forward, 4° back • Standard Parts Throughout • Easy and Economical to Repair • Special equipment available.

Write for literature and prices, Dept. 571

truck-man

DIV. OF KNICKERBOCKER COMPANY
603 Liberty Street • Jackson, Michigan

Concrete Manufacturer

INDEX TO ADVERTISERS

A A Wire Products Co. 250
American Clay Machinery Division, Huber-Warco Co. 277
*American Pulverizer Co. 240
Andrews Machine Co. 249

*Besser Co. 232, 241, 263, 289, 294
*Bin-Dicator Co. 272
*Butler Bin Co. 295

Carpenter Mfg. Co. 286
Chase Foundry & Mfg. Co. 282
Cinder Shippers 286
Classified Section 290-291
Cleaver-Brooks Co. 229
Columbia Machine Works 255
*Construction Machinery Co. 293
Cook Bros. Equipment Co. 262

Darden Industries, Inc., Roy 281
Des Moines Glove & Mfg. Co. 284
Dow Chemical Co. 275
Dur-O-waL 282

Edick Laboratories 286
Elastizell Corp. of America 236
Erickson Power Lift Trucks, Inc. 286
*Erie Strayer Co. 267

Fleming Mfg. Co. 237
*Food Machinery & Chemical Corp. 273
Forney's, Inc. 244
Forrer's Division, Spray-O-Bond Co. 288
Four Wheel Drive Auto Co. 245

*General Electric Co., Communication Equipment 259
General Engines Co. 291
GO Corp. 297
Griffin Corp., Larry 279
Gwynne, Inc., J. H. 279

Huber-Warco Co. 277
Hydrotile Machinery Co. 242
*Hyster Co. 243

Irvington Form & Tank Corp. 287

Jaeger Machine Co. 246-247

Kent Machine Co. 285

*See also Detailed Information in 1956 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK

WHETHER ENGINE TAKE-OFF DRIVE OR INDEPENDENTLY POWERED

CMC Transcretes® make you more money

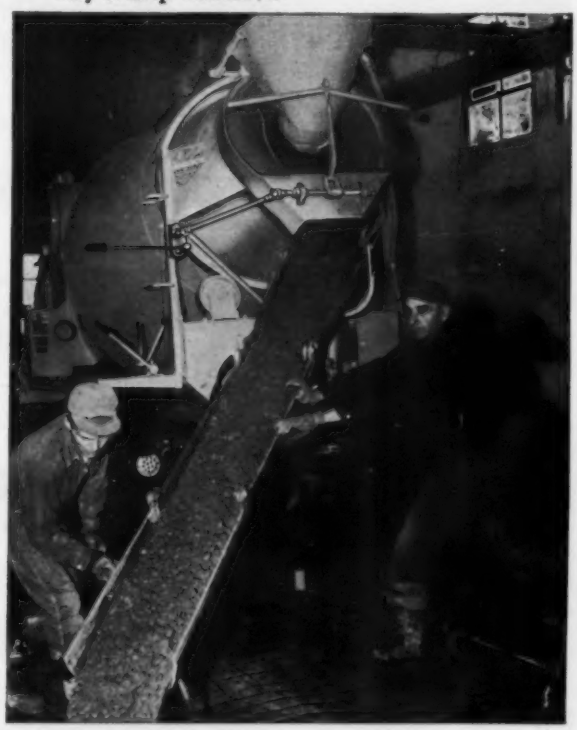
1 *GUARANTEED* FASTER CHARGING...
CMC "Swing-In" Hopper has 56% larger opening and no sharp turns. Takes material super fast — a yard every 8 to 9 seconds — without any flash back of cement or spilling of aggregates.

2 *GUARANTEED* MORE THORO MIXING...
Extra large diameter drum head plus deep "L" section blades assures greater mixing action per drum revolution. This guarantees faster, more thoro, more efficient mixing of any slump concrete.

3 *GUARANTEED* QUICKER DISCHARGE...
Exclusive CMC "Swing-Out" Hopper is out of the way for discharge so concrete can come through big UNOBSTRUCTED opening in full, easily controlled stream. Handiest chute arrangement of all makes any pour simple, easy, fast.

• • • • • • • • • • • • •

TRANSCRETES are America's only truck mixers with the famous CMC Floating Drive which eliminates the troubles of ordinary rigid drives. Still another reason why TRANSCRETES beat 'em all a country mile for pouring more and better concrete — easier, faster — and at less cost! There's a size TRANSCRETE (from 4 to 7 yard mixing capacities) to do any job in the books. *And they carry a money-back guarantee!*

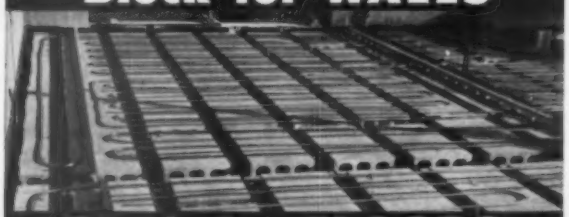


For complete information on TRANSCRETES... contact your local CMC distributor... or write us

CONSTRUCTION MACHINERY COMPANY • Waterloo, Iowa

Go After the Entire Market!

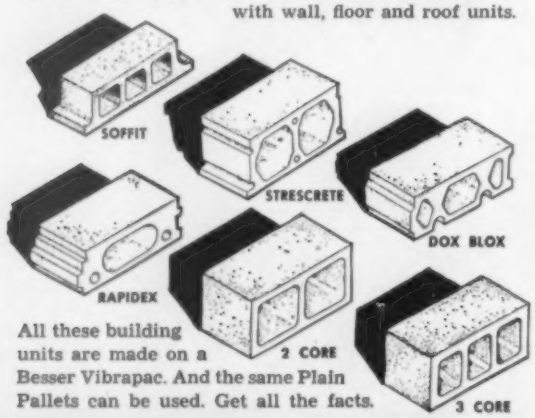
Block for WALLS



Block for FLOORS

Block for ROOFS

Fire-safe walls? Of course! But floors and roofs should be fire-safe, too. Walls are full of openings (windows, doors, etc.), while floors and roofs are relatively solid. Actually, TWICE the volume of block is required for floors and roofs than is required for walls. So why not go after this profitable market? Supply customers with wall, floor and roof units.



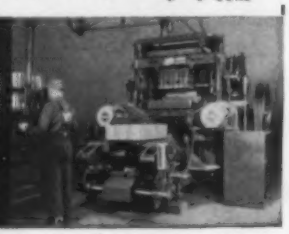
All these building units are made on a Besser Vibrapac. And the same Plain Pallets can be used. Get all the facts.

Write for Bulletin

BESSER COMPANY

ALPENA, MICHIGAN, U. S. A.

Complete Equipment for Concrete Block Plants



A 8658-1/4

Lone Star Cement Corp. 228

McNamar Boiler & Tank Co. 261
Memphis Equipment Co. 280
Motorola Communications & Electronics, Inc. 235

National Wire Cloth Co. 286
Noble Company 238-239

Olsen Corp., Gene 297
Oswalt Engrg. Service Corp. 282

Portland Cement Assn. 264
Praschak Machine Co. 283
PreCaster, Inc. 234
Precision Machine Works 276
Presto Brick Machine Corp. 230

Quinn Wire & Iron Works 280

Radio Corporation of America 251
Reichard-Coulston, Inc. 264

Sarasota Engineering Co., Inc. 244
Side-O-Matic Unloader Corp. 289
Spillman Co., R. L. 291
Standard Dry Kiln Co. 284
*Stearns Manufacturing Co. 298
Surety Rubber Co. 279

Trinity Div., General Portland Cement Co. 284
Truck-Man Division, Knickerbocker Co. 292
*Twin City Iron & Wire Co. 288

Unit Step Form Co. 272

Westinghouse Transit Mixer Division, LeTourneau-Westinghouse Co. 296
Williams, Roger F. 288

*See also Detailed Information in 1956 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK.

For Fast Results...

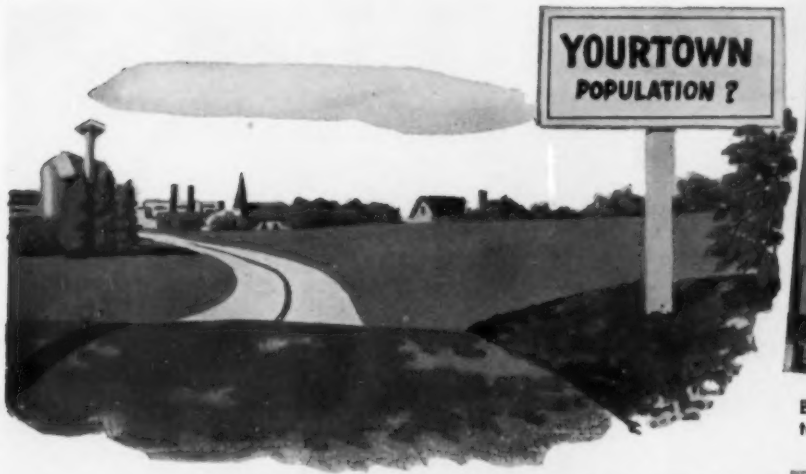
ADVERTISE YOUR USED EQUIPMENT IN

THE CONCRETE MANUFACTURER'S

CLASSIFIED SECTION

"The Marketplace of the Industry"

How Small a Town Will Support a Ready Mixed Plant?



Butler Installation in a town of 1,047 population.

There are communities of 1000 population (and less) in which BUTLER Plants are proved and profitable investments. Many orders — and in ever increasing flow — come to BUTLER for ready mixed plants in towns of 1500 to 3000. Cities of 25,000 people have as many as 3 BUTLER installations.

There seems to be no end to the fantastic amounts of concrete poured in this country.

And there are still many markets wide open and hungry for a ready mix operation.

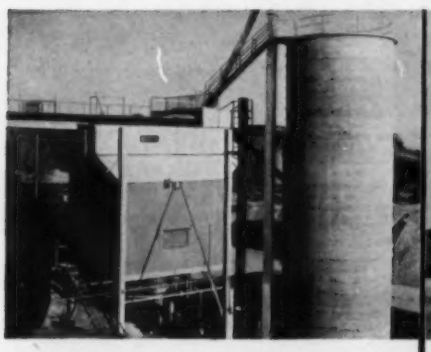
If *you* are planning to enter this thriving industry be sure to take advantage of the wide knowledge, long experience and extensive engineering service which BUTLER provides to help you launch a profitable enterprise.

Why not write or wire BUTLER about it today?

. . . in town of 728 population

BUTLER BIN COMPANY

987 BLACKSTONE AVENUE • WAUKESHA, WISCONSIN



. . . in town of 1,190 population

. . . in town of 12,900 population

. . . in town of 6,725 population

WESTINGHOUSE Transit Mixers

Have the Most Efficient Drum Drive Mechanism

• No other mixer has a drum drive which is as positive, sturdy and trouble-free as Westinghouse and yet affords complete flexibility. Follow the drive from engine to drum in the illustration at right:

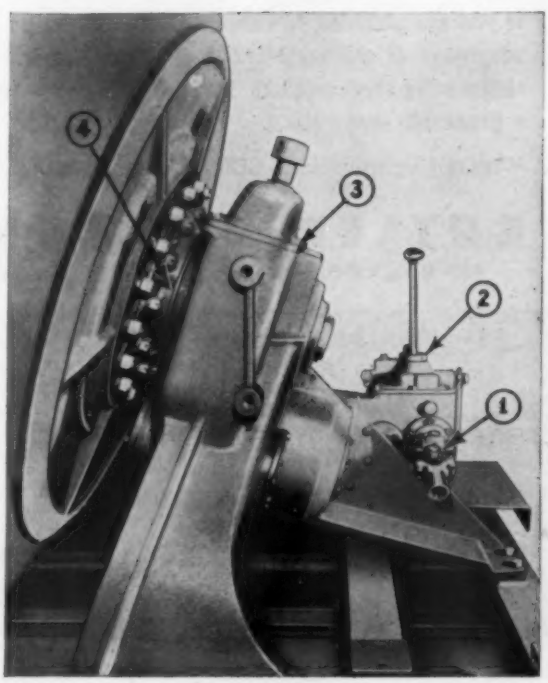
1. A strong universal joint takes the engine power to the transmission eliminating possible strains due to frame flexing.

2. Two-speed transmission (standard on all models) permits wide range of drum revolutions, from 2 to 11 r.p.m., within engine's most efficient operating range—600 to 1700 r.p.m.

3. Drum is driven by fully-enclosed gear drive—*an exclusive patented feature.* No chains or exposed gears to wear out and replace. Requires little attention and maintenance.

4. Drum has large ball-and-socket mounting *at the drum* —an exclusive feature. The only mounting which does not transmit misalignment to driving parts due to flexing of truck and mixer frames in traveling over uneven surfaces.

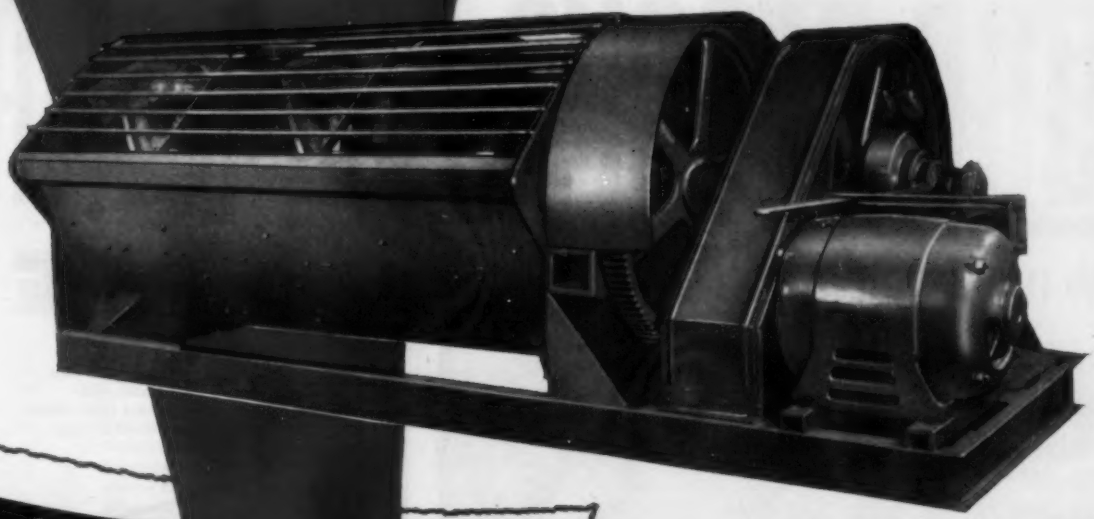
Westinghouse mixers are available in 5 sizes—4½ to 6½ yd. They have other important features you'll like. Before buying another mixer write for descriptive literature to



TRANSIT WESTINGHOUSE MIXERS

WESTINGHOUSE TRANSIT MIXER DIVISION
LeTourneau-Westinghouse Co.
INDIANAPOLIS • INDIANA

ALL MIXERS LOOK ALIKE



. . . . but check the PERFORMANCE!

PLUS GOCORP SKIP LOADERS TO DELIVER THE GOODS

Whether for transferring mixed concrete from the mixer to the main supply hopper on your block machine or for conveying dry material to an elevated mixer or bin, there is a GOCORP skip loader to match every GOCORP Mixer. Vertical or inclined track • 12 to 75 cubic feet capacity • Specials to solve *your* problem.

INCLINED SKIP INSTALLATION. Mixer is mounted below floor level for handy charging. Convenient for bagged cement too. Angle and length of tracks may be varied to fit your needs.

HERE'S WHY GOCORP OUT-PERFORMS THEM ALL

- **NI-HARD SECTIONAL LINERS**—Longer wearing, quicker to install.
- **NI-HARD RIBBON BLADES**—for a thorough faster mix—Last longer.
- **BEARINGS**—Extra oversize, self-aligning, anti-friction—standard on all GOCORP mixers.
- **NI-HARD DUST HUBS AND RINGS**—Better seal, longer wear.
- **WATER DISTRIBUTING MANIFOLD**—Quick, effective, uniform water distribution.
- **CUT STEEL GEARS**—Assures proper mesh—trouble free.
- **CLUTCH PULLEY**—Heavy duty, friction type, controlled from charging side.
- **DRUM CONTOUR**—Safer, reduces spillage when overloaded.
- **POWER**—Oversized motors on all models.
- **DRUM GRID GUARD**—Permits safe charging and complete visibility. Optional on smaller sizes.
- **AIR OPERATED DISCHARGE DOOR AND MIX-TIMER**—Standard equipment on 75 cu. ft. mixer, optional on smaller sizes.
- **GOCORP'S ENGINEERS** are also prepared to meet your special needs including left-hand drive and truck mounting.

GOCORP MIXERS come in all sizes from 12 to 75 cubic feet. There is one to meet your requirements regardless of the size of your block machine or the aggregate used.

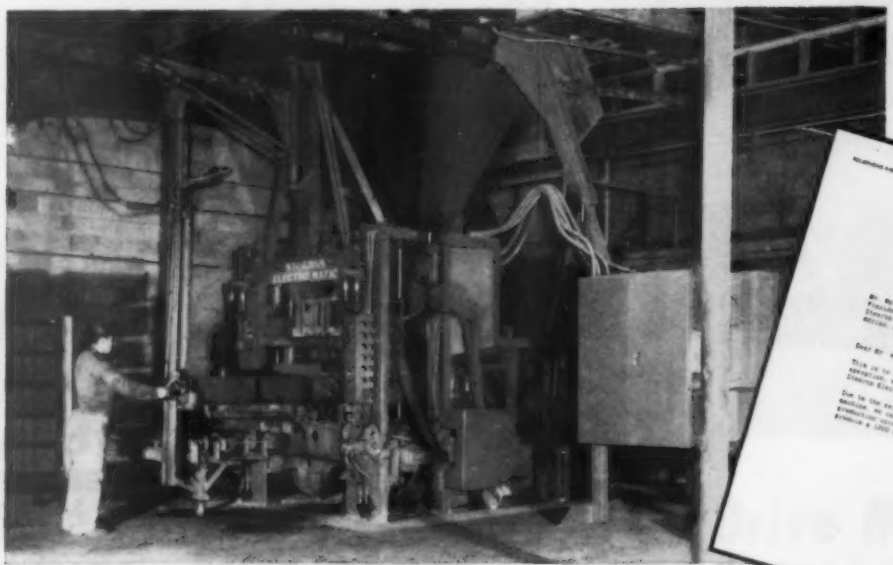
GOCORP
ADRIAN-MICH.

454 Grace Street Adrian Michigan

CREGO BLOCK CO. OF ALBUQUERQUE, N. M. IS PRODUCING

1080 BLOCKS PER HOUR

WITH THEIR NEW Stearns ELECTROMATIC



Stearns Electromatic, Skip-loader, and Gearmotor Drive Mixer installation at Crego Block Co.

CREGO BLOCK CO.

Proof Positive THAT

EXTRA BLOCKS MEAN EXTRA PROFITS FOR YOU

"Due to the *extra* compaction we get on this machine," says Mr. Crego, "we can maintain a 6 cycle per minute production." In addition, Mr. Crego has stated that the quality and strength of the blocks produced on the Electromatic are far superior to blocks made on his former machine.

Here *again* is proof positive . . . that the Stearns Electromatic is *exclusively* designed and built for high speed operation . . . faster cycling *without* machine abuse . . . higher productivity *without* sacrifice of quality . . . lower unit costs and increased profits for you. Write today for full particulars, and the installation nearest to you!

Mr. "Ben" B. Crego, owner of Crego Block Co.

ASK ANY OWNER!

We'll see you there!

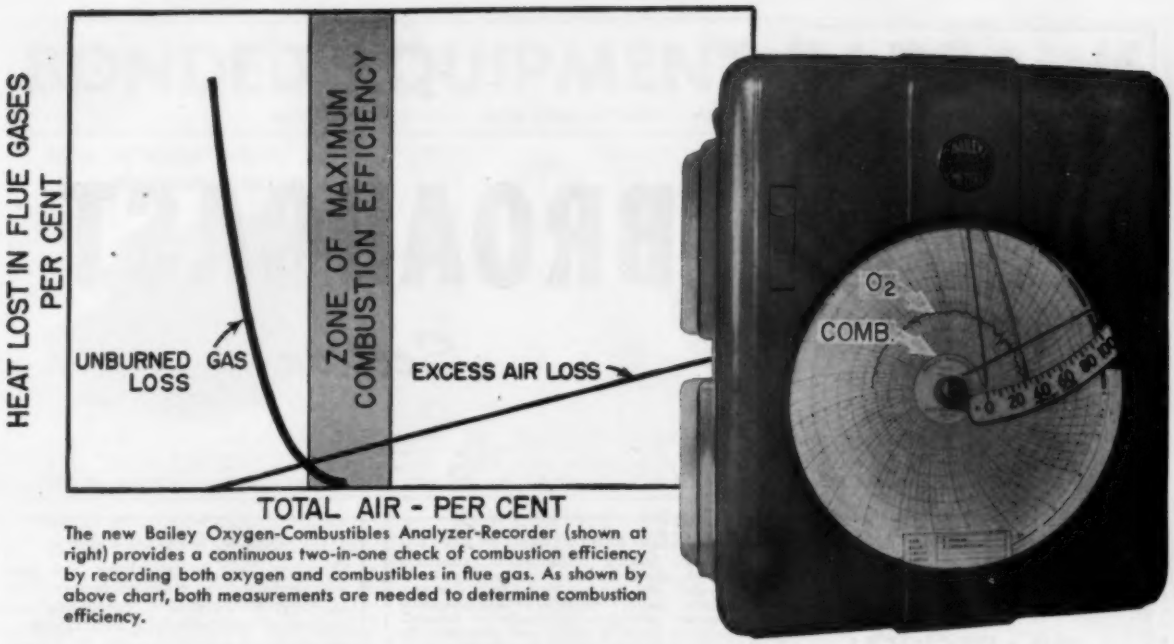
10th Concrete Industries Exposition and
37th N. C. M. A. Convention
St. Louis, Mo. Feb. 25-28

STEARNS

MANUFACTURING COMPANY • INC

ADRIAN • MICHIGAN • U.S.A.

Complete Concrete Products Plant Equipment



The new Bailey Oxygen-Combustibles Analyzer-Recorder (shown at right) provides a continuous two-in-one check of combustion efficiency by recording both oxygen and combustibles in flue gas. As shown by above chart, both measurements are needed to determine combustion efficiency.

BAILEY announces . . .
New 2 in 1 way to measure Combustion Efficiency

The new Bailey Oxygen-Combustibles Analyzer-Recorder gives you a continuing double check on combustion economy. It's fast response measures and records:

1. Excess air—regardless of the fuel or combinations of fuels being burned.

2. The mixing efficiency of your fuel-burning equipment—by indicating the amount of combustibles in your flue gas, resulting from incomplete mixing of fuel and air.

Combustion efficiency depends upon fuel-air ratio. Too much fuel can be even more costly than too much air. And because of the interdependence of these two factors, no control that measures only one of them can give you complete protection.

Now, for the first time, you can check *both* with a *single* fast acting instrument, using the new Bailey Oxygen-Combustibles Analyzer-Recorder for industrial furnaces, kilns, heaters and boilers.

Fuel economy improves as excess air is reduced —until unburned fuel begins to show up in the flue gas. When this happens, combustion efficiency drops off sharply if there are further decreases in the air-fuel ratio. That's why combustion gases must be analyzed for *both* oxygen and combustibles to get a true indication of efficiency—and that is why Bailey coordinates both measurements on the same chart, to show when excess air may be reduced safely without danger of greater losses from unburned gases.

The Bailey Oxygen-Combustibles Analyzer is an approved combustion safeguard.

Ask your local Bailey engineer for suggestions on application. Equipment details in Product Specifications E65-1 and E12-5. P31-1

BAILEY METER COMPANY

1051 IVANHOE ROAD • CLEVELAND 10, OHIO

INSTRUMENTS AND CONTROLS

For Power And Process

Advertising rate per issue:

$10.50 per column inch. Lower rates for larger space used and/or on a contract basis.

Write for rate card.

Closing date:

20th of month preceding date of publication.

PIT & QUARRY
431 S. Dearborn St. Chicago 5, Ill.

BROADCAST

Section

MECHANICAL ENGINEERS

DRAFTSMEN

ESTIMATORS

WITH HEAVY MACHINERY EXPERIENCE
CEMENT PLANT EXPERIENCE PREFERRED
PERMANENT POSITIONS WITH MACHINERY MFR'S
NEW YORK OFFICE
INSURANCE BENEFITS

•

SEND RESUME AND SALARY DESIRED TO:

BOX PQ-1042, c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

PROJECT ENGINEER WANTED

Graduate Mining, Metallurgical, Chemical or Mechanical Engineer, preferably 25 to 35 years old, wanted by medium size progressive heavy machinery manufacturing company located in Southeastern Pennsylvania. To assist in design and preparing for market of various lines of equipment used in mineral dressing, heavy chemical, cement and rock products industries. Must have had engineering and field experience, and be willing to work on drafting board, travel and do field service. Opportunity also exists for a properly qualified individual, eventually to become a sales engineer. Salary open.

BOX PQ-904, c/o PIT AND QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

FIELD GEOLOGIST

Carry on field investigations and geological studies for portland cement manufacturer for purpose of developing new sources of raw materials and extending knowledge of present deposits. Will headquarter in Chicago, but must be free to travel. Will consider recent graduates as well as experienced applicants. Must have degree. Give full details on experience, training, personal data, and salary desired in first letter. Reply to:

BOX PQ-9102, c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

FOR SALE

30" Superior McCulley Gyratory Crusher, with 150 Horsepower Motor —$24,000, central Missouri.

BOX PQ-1102 c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

SALES ENGINEER

Wanted by Crusher Manufacturer located in St. Louis. 30-35 yrs. age desirable, with experience in reduction machinery. Some customer contact and inside sales work. Such as correspondence, Etc. Excellent opportunity. Write to:

Box PQ-1062 c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

Professional Services

ROTARY DRYER

Bartlett and Snow, oil-fired type, 3′ dia. x 20′ long sprocket-and-chain drive to Cleveland-reducer, 5 HP Motor. Perfect cond. May be inspected. For further details write:

Box PQ-1112 c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

Quarries
Crushing Plants
Cement Plants
Storage Methods
Operating Costs

E. Lee Heidenreich, Jr.
Consulting Engineer

75 Second St.
Newburgh, N. Y.
Phone: 1828

9 South Clinton St.
Chicago 6, Ill.
Ph. FR 2-4186

Construction
Design
Operation
Plant Layout
Appraisals

FOR SALE

One 4 x 8 Hardinge Rod Mill complete, including speed reducer, 50 H.P. motor, rods and Slurry pump—$9500.00—F.O.B. Martindale, New York. Write

BOX PQ-8072 c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

JOHN F. MEISSNER ENGINEERS INC.
CONSULTING & DESIGNING ENGINEERS
BULK MATERIALS HANDLING
SPECIALISTS IN DESIGN OF CRUSHED STONE, SAND, GRAVEL AND READY MIX PLANTS
308 W. WASHINGTON • CHICAGO 6, ILL.

FOUNDATION TESTING, CHEMICAL ANALYSIS

CORE DRILLING

Thomasville Drilling & Testing Co.
THOMASVILLE, PENNA.

WANTED GENERAL MANAGER

Large midwest quarry is seeking an experienced resident plant manager. Plant personnel consists of well qualified department heads under competent general supervision and engineering staff. Applicants must be experienced in all phases of crushed limestone production for metallurgical and construction purposes, personnel management, labor and public relations and purchasing. Give complete personal data, age, education, experience and references. All replies will be treated confidentially.

Box PQ-1132 c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

CORE DRILLING ANYWHERE
We look into the earth
PENNSYLVANIA DRILLING COMPANY
PITTSBURGH 20, PA.

DESIGNED TO INCREASE YOUR CLIENTELE—

PIT and QUARRY'S new classified section for professional men.

Write today for rates.

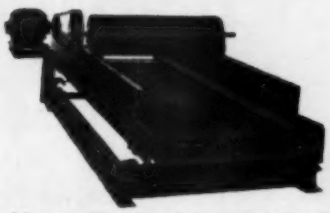
BONDED EQUIPMENT BARGAINS

IMMEDIATE SHIPMENT FROM OUR FACTORY - WRITE, WIRE OR PHONE

NEW BONDED® HEAVY DUTY VIBRATING SCREENS

Model Number	No. of Decks	Screening Area	Sale Price
124AS	1	2'x4'	$ 443.00
224AS	2	2'x4'	472.00
126AS	1	2'x6'	472.00
226AS	2	2'x6'	501.00
136AS	1	3'x6'	581.00
236AS	2	3'x6'	688.00
336AS	3	3'x6'	956.00
138AS	1	3'x8'	675.00
238AS	2	3'x8'	815.00
338AS	3	3'x8'	996.00
138BS	1	3'x8'	1231.00
238BS	2	3'x8'	1282.00
338BS	3	3'x8'	1375.00
248BS	2	4'x8'	1865.00
348BS	3	4'x8'	2035.00
2410BS	2	4'x10'	1953.00
3410BS	3	4'x10'	2305.00
3412BS	3	4'x12'	2635.00

NEW BONDED® GENERAL DUTY VIBRATING SCREENS



For mineral, chemical and other industrial products. Fast, efficient and economical for cleaning, sizing, grading, dewatering. Made in all metals including stainless steel. Enclosed models for hot materials or dust control. Bonded screens are built for any screening operation, wet or dry. HEAVY DUTY MODELS, TYPE BS: 4-bearing positive throw eccentric shaft; 3' x 8' to 5' x 14', 1 to 5 decks. GENERAL DUTY SCREENS, TYPE AS: eccentric weight mechanism, spring mounted, 1 to 3 decks. 2' x 4' to 3' x 8'. Write for new 8-page Bulletins 1086 and 1087.

NEW BONDED® TROUGHING IDLER CONVEYOR BARGAINS

Complete Ready-Fab sections quickly and easily joined together on the job. We take our loss on our stock of short length belting. You can save as much as 50% on the BONDED CONVEYOR SPECIALS listed, with conveyor belting in two pieces. Conveyors are equipped with 5" roll diam. idlers and return rolls, 20" diam. head pulley and 16" diam. tail pulley mounted on 2¼" or 2-7/16" diam. shaft. Belt is new 4-ply, 28-oz. duck, ⅛" top rubber cover x 1/32" bottom cover and is fresh stock made by leading manufacturers.

Remember, You Save Up To 50%

Conveyor Prices Include Belting

Belt Width	Length of Conveyor	List Price	Sale Price
14"	25'	$1397	$ 722
14"	50'	2222	1144
14"	85'	3377	1733
16"	20'	1262	636
16"	45'	2137	1088
16"	60'	2662	1359
16"	90'	3712	1900
18"	25'	1477	794
18"	45'	2217	1166
18"	70'	3142	1648
18"	85'	3697	1933
18"	100'	4252	2220
18"	130'	5362	2797
20"	25'	1517	828
20"	60'	2882	1533
20"	75'	3467	1838
20"	90'	4052	2145
24'	25'	1590	898
24'	45'	2430	1330
24'	70'	3480	1875
24'	100'	4740	2514
24'	120'	5580	2950
24'	150'	6840	3603
30"	50'	2911	1617
30"	70'	3871	2119
30"	90'	4831	2614
36"	25'	1818	1118
36"	45'	2858	1678
36"	60'	3638	2096
36"	100'	5718	3214

For conveyors longer or shorter than those listed above, add or deduct the following per foot prices according to belt width. Prices include belting.

For 14" belt	$15.84 per foot
For 16" belt	18-04 per foot
For 18" belt	19.24 per foot
For 20" belt	20.37 per foot
For 24" belt	21.78 per foot
For 30" belt	24.75 per foot
For 36" belt	27.95 per foot

Write For Bulletin #1138

NEW CONVEYOR BELTING SAVE UP TO 25%

Heavy duty 4-ply, 28 oz. duck ⅛" top rubber cover by 1/32" bottom cover 12# to 15# average friction pull; 800# to 1000# average cover tensile rubber belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily. Famous brands at deep cut prices. Fresh stock.

Width	Ply	List Price	Sale Price
14"	4	$3.43 foot	$2.75 foot
16"	4	3.86 foot	2.88 foot
18"	4	4.27 foot	3.19 foot
20"	4	4.69 foot	3.69 foot
24"	4	5.55 foot	4.14 foot
30"	4	6.77 foot	5.06 foot
36"	4	8.01 foot	6-00 foot

A high grade of heavy duty 4 and 5-ply, 28 oz. duck, ⅛" top rubber cover x 1/32" bottom rubber cover, 16# to 19# average friction pull, 2500# to 3000# average cover tensile belting. This belt is for more severe service, high tonnages and abrasion resistance. For handling stone, mineral ores, concrete, cement, coal and other similar materials, both wet and dry. Belt has molded rubber edge.

Width	Ply	List Price	Sale Price
16"	4	$4.59 foot	$3.36 foot
18"	4	5.09 foot	3.72 foot
20"	4	5.57 foot	4.24 foot
24"	4	6.56 foot	4-80 foot
30"	4	8.05 foot	5.89 foot
24"	5	7.68 foot	5.61 foot

Other widths, plies, duck weights and cover thicknesses available at low prices. Write for Free Sample.

NEW IDLERS AND RETURN ROLLS 25% BELOW LIST PRICE

3-roll, 5" diameter Troughing Idlers for:			
14" belt	$18.50	24" belt	$21.25
16" belt	19.25	30" belt	22.00
18" belt	20.50	36" belt	22.75
20" belt	20.75	48" belt	25.50

1-roll, 5" diameter Return Idlers for:			
14" belt	$7.25	24" belt	$ 8.50
16" belt	7-50	30" belt	9.50
18" belt	8.00	36" belt	10.00
20" belt	8.25	48" belt	11.50

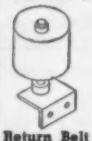
All steel. Interchangeable with other well known makes. Furnished with easily replaceable pre-lubricated sealed ball bearings. Also, can be furnished with greasable type Alemite Fitted bearings at slight additional cost. Maintenance is negligible. Bonded Rubber Disc Impact Idlers also available from $61.00. Write For Bulletin #1138.

NEW BONDED ® FEEDERS

For high tonnage and controlled feed of Aggregate, Sand, Gravel, Crushed Stone, Clay products, Metallic Ores, Coal, Cinders and almost any other bulk material to Crushers, Screens, Conveyors, Mills and other process machinery. Feeder may also be driven from tail shaft of Bonded ® Troughing Idler Conveyors, thus eliminating the necessity of two motors. Capacities to 225 tons per hour. Full information in Bulletin 1140. Write for it. Priced from $255.00

BUILD IT YOURSELF WITH BONDED CONVEYOR PARTS & ACCESSORIES

Ready Made Head, Tail and Intermediate Conveyor Sections. All types of Idlers, Return Rolls, Belting Reducers, Accessories and Motors in Stock so you can Build Your Own Conveyor. All Bonded Troughing Idler Conveyors (described in this ad) can be equipped with any accessory described below or use them on your present conveyor or Bucket Elevator. Write for Bulletin #1138.



Return Belt Guide Idler $11.75

Carry Belt Guide Idler $14.50

Head & Tail $149.00

Self-Aligning Idler $60.75

Flat Roll Idler $13.50

Holdback $99.00

YOU ARE WELCOME to Visit the Bonded Factory Any Time.

Wing Pulley $71.00

Screw Takeup and Frame $30.25

Rubber Disc Impact Idler $61.00

3 H.P. Speed Reducer $89.00

More than 5,000 Mines & Quarries Have Modernized with Bonded Equipment.

BONDED SCALE AND MACHINE COMPANY

PHONE: Hickory 4-2188, Days
110 BELLVIEW

WRITE FOR FREE CATALOG AND PRICES

Mfgrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders

PHONE: AX. 1-2213 Evenings
Columbus 7, Ohio

WANT CO - ADVENTURER

Well known aggregate producer owns outright, complete, all electric driven, modern, steel, 600 TPH, Sand-gravel or crushed stone plant, including excavating and hauling equipment. Available now completion of large dam project. Will consider moving to large isolated project or commercial deposit adjacent to sizeable potential aggregate market. Prefer joint venture with established local producer, but will work on contract or royalty basis. Will sell plant only as a unit.

BOX PQ-1122, c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

WANTED
LIME PLANT PRODUCTION MANAGER

Established company in East desires man qualified in technical and practical aspects of operating vertical kiln plants. Prefer man between 32 and 40 years of age with production experience. Attractive proposition to right man. Send full particulars in first letter.

Box PQ-1162 c/o Pit & Quarry Publications
431 S. Dearborn St. Chicago 5, Ill.

MINING ENGINEER

Nationally known manufacturer offers an excellent opportunity to graduate mining engineers in non-metallic underground mining operation in the East. Salary commensurate with education and experience. Position offers excellent possibilities for managerial growth to an individual with potential. Ideal location for a family man in low cost of living area with good company housing available at low rental. In reply, please state age, education, background, experience, and salary required.

BOX PQ-1152, c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

WANTED TO BUY
ROTARY DRYERS
ROTARY KILNS
BALL & ROD MILLS
DIESEL LOCOMOTIVES & CRANES

R. C. STANHOPE, INC.
60 E. 42nd St., New York 17, N. Y.

WANT TO BUY

Steel guy derricks, 100' boom, capacity 20-ton or better at low boom.

MINNESOTA GRANITE SUPPLY CO.
Delano, Minn.

WANTED

One 705 or 707 Round Nose Blaw-Knox Clam Bucket used.

L. G. EVERIST, INC.
Paulton Bldg. Sioux Falls, S. D.

WANTED

Sufficient 24" belt and idlers to extend approximately 300 ft. Nothing less than good materials will be considered. Needed in place by March 1st.

ILLINOIS SILICA SAND COMPANY
375 S. Parkview Ave. Columbus 9, Ohio

JAW CRUSHERS—6" x 3" to 60" x 48"

Before buying or selling any FARREL-BACON JAW CRUSHERS it will pay you to consult

BACON-PIETSCH Co., Inc.
Engineers & Manufacturers Send for Catalogue
Montclair, N. J. 22 Park Street

Machine Shop Facilities
FEEDERS Conveyors, Screens, etc.

FOR SALE BY OWNER

1—Symons Double Decked Screen 4' x 12', with extra frames.
1—SECO Rebuilt double decked screen 4' x 16', with extra frames.

Ohio Valley Sand Company
P.O. Box 3 New Martinsville, W. Va.

COMPRESSOR: Chicago Pneumatic OCE, 26 x 15 x 18 with 400 H.P. synchronous motor, 2200 volt, 200 RPM.
TRUCK CRANE: P & H 20 ton steel erector's crane, 80 ft. boom, 30 ft. jib.
SUCTION HOSE: 2000 ft. 4" with couplings, 30 ft. lengths, new condition.
OVERHEAD ELECTRIC TRAVELING CRANES: 10, 15, 20, 25, 30, 40, 50, 75, 100 and 150 ton capacity, spans 21 ft. to 74'8". 3 motor type, cage control.
BELT CONVEYORS: One 60" x 170 ft., one 60" x 300 ft., complete with all mechanical parts, belt and supporting structures.
DRILLS: Joy Champion Rotary Drill, heavy duty, with 7⅞" bits, diesel powered. Ingersoll Rand Quarry Master, new 1953, diesel compressors.
TRUCK SCALE: 50 ton capacity, 10' x 50 ft., modern, condition like new.
DRAGLINES: Monighan 8 yd. capacity, 160 ft. boom, diesel powered. Also, one 2-W. 85 ft. boom.
SHOVELS: Marion 4161, 5 yd. capacity, electric, with or without dragline equipment. Also, one 5 yd. with diesel electric power. One Bucyrus Erie 54-B and one Northwest 80-D, both diesel powered.
DRYERS & KILNS: Rotary Kiln 10'6" x 104', ¾" plate, welded plate, thoroughly modern, new condition. 2—Heavy duty 9' x 70' Dryers with all equipment, new condition.
CONE CRUSHER: Symons 2 ft. standard bowl.
JAW CRUSHERS: 10' x 20", 15" x 36", 18" x 30", 24" x 36", 30" x 42", 42" x 40" and 48" x 60", with or without motors.
PAN CONVEYOR: 48" x 110 ft. complete with motor, reducer, etc., heavy duty type, designed for rock.
PULVERIZERS: Marcy 7' x 12' Rod Mills, open end type, modern design, new condition. Hardinge 8' x 48" Ball Mill.
HAMMER MILL: Jeffrey 36" x 60", type B.
SCREEN: Scalper, heavy duty type, Robins Vibrex single deck 6' x 12' with 15 H.P. motor and drive, built 1952, slightly used, condition like new.

We Buy and Sell Equipment Throughout North and South America
A. J. O'NEILL
Lansdowne, Pa.
Phila. Phones: MAdison 3-8300—3-8301

FOR SALE

ONE BRAND NEW 16" SUPERIOR McCULLY GYRATORY CRUSHER. NEVER BEEN USED DUE TO CHANGE OF PLANS.

PRICE $26,000
F.O.B. McCOOK, ILL.

DOLESE & SHEPARD CO.
Route 66 & East Ave. Hodgkins, Ill.
Phone: FLEETWOOD 4-2800
Ask for Mr. Doody

SAND & GRAVEL PLANT
Now Operating—Small Investment

Excellent pit reserves—Glacial mound deposit—Good yardage lease. Surrounded by 3 industrial cities & flat land in Central Illinois. Water available for washing. Owner-Manager deceased—Write son:

RAY E. PETERS
125 W. Adams St. Pittsfield, Ill.

FOR SALE

2-Browning Model WB-1 Wagon Cranes, 70' Boom, 15-Ton, Model H Chassis with twelve 12.00x24 pneum. tires. Waukesha Gas Engine. Approx. 4000 hrs. use. One-man operation. Price: $12,500.00 each.

CONSTRUCTION & POWER MACHINERY, INC.
270 23rd St. South 8-4900 Brooklyn 15, N.Y.

WANTED

Caterpillar & General Motors Engines and Diesel Electric Sets.

Southwestern Supply & Equip. Co.
P. O. Box 14357 - Phone MIssion 9-2706
HOUSTON 21, TEXAS

FOR SALE

9—Rotary Dryers & Kilns: 3'x15'; 3'x24'; 42"x25'; 4'6"x40'; 6'x60'
2—Rotary Coolers: 104"x30'; 104"x70'
BALL MILLS: Hardinge 6' x 22"; Allis Ch. 6' x 16'; 5' x 9'; 6' x 5'
MINE HOIST: Single and Double Reduction
1—Penna. Crusher Ring Type Granulator, Trojan size K3-24, 40 HP
1—Sturtevant 8 x 10 Jaw Crusher

PERRY EQUIPMENT CORP.
1414 N. 6th St. Phila. 22, Pa.
STevenson 4-7210

WANTED

45 or 50 ft. truck scale; 30 tons or better.
400 or 500 ft. good used 36" conveyor belt.
50 used 36" troughing idlers.
1 yd. Caterpillar front end loader.
Hammer mill for soft limestone—36 x 42" or larger.
Double-deck vibrating screen for above plant.

FOR SALE

New Barber Greene, self-propelled undercar coal unloader; with 20 HP Wisconsin gasoline engine. New and perfect condition but designed for coal—not gravel. One-third price.
12 x 24" Good Roads "Champion" jaw crusher. Wt. 14,000 lbs. Splendid operating condition throughout. Under one-fourth price.

MARIANNA LIMESTONE CO.
P. O. Box 289 Marianna, Fla.

HERE ARE YOUR BEST BUYS

CRANES & SHOVELS

Insley	"K-12"	½ yd. Trench Hoes or Draglines.
Lorain	"TL-26"	½ yd. Dragline or Trench Hoe, Reconditioned.
Unit	"514"	½ yd. Trench Hoe, fair condition.
Link-Belt		Shovel Attachment complete, for LS-85.

TRANSIT MIXERS

2—Jaeger 3 yd. (4½ yd. Agitator) Hi-Discharge, 1945-1947 Models, one mounted on 6-Wheeler, one un-mounted.
1—Smith 3 yd. (4½ yd. Agitator) Hi-Discharge, un-mounted.
1—Rex 3 yd. (4½ yd. Agitator) Hi-Discharge, mounted F-8 Ford Tandem.
1—Rex 3½ yd. Hi-Discharge Adjusta-Wate Moto-Mixer, un-mounted.
1—Rex 3½ yd. Hi-Discharge Adjusta-Wate Moto-Mixer, un-mounted.
8—Rex 5½ yd. Adjusta-Wate Moto-Mixers, 6 months to 1½ yrs. old, un-mounted.

FOUR END LOADERS

Caterpillar	"D-6"	Diesel Tractor, Traxcavator Loader, Cab, 1950 model—excellent.
Caterpillar	"D-6"	Diesel Tractor w/Traxcavator. Needs some track repairs.
Pettibone	"15"	1½ yd. Four Wheel Drive Tractor Shovel.
Hough	"HM"	1½ yd. Four-Wheel Drive Payloader, Reconditioned.
Hough	"HF"	¾ yd. H.T. Payloader.

MISCELLANEOUS

Barber-Greene	"522W"	Bucket Loader, rubber-tired, reduced to sell.
Adams	"411"	Diesel Motor Grader, Cab and Scarifier.
Barber-Greene	"705"	RT Runabout Ditcher, digs 4½ ft. deep.
Chicago Pneumatic	"60"	Reconditioned Portable Compressor. We have 3 of these from $800. to $1250.
Universal	"2036"	R.B. Jaw Crusher, skid-mounted, w/Apron Feeder.
Universal	"1824"	Rebuilt R.B. Jaw Crusher, on skids.
Cedarapids		Used Portable Gravel Plant, closed circuit, two unit plant; hopper, plate feeder, gas power, 1524 Jaw, 3 x 8 screen, rolls, gas engines, pneumatics.
Bayport	22 yd.	New Aggregate Bins. 2 in stock.
Caterpillar	"D318"	Diesel Electric Generator Set, 40 KW.

NOTE: Above equipment belongs to us. Located in our yard.

EIGHMY EQUIPMENT COMPANY
120 S. Pierpont
Rockford, Illinois **Phone 4-6706**

When You Need
LOW COST—DEPENDABLE
INDUSTRIAL RUBBER PRODUCTS

call CARLYLE

FOR ALL YOUR REQUIREMENTS OF

RUBBER HOSE

Air · Acid · Paint Spray · Solvent · Welding · Pile Driver · Discharge · Fire · Fuel Oil · Oil Suction & Discharge · Gasoline · Suction · Water · Steam · Vacuum · Pneumatic · Road Builders

BELTING

Conveyor · Elevator · Grader · Chute Lining · Hot Material · Mucker · V-Belts · Transmission

PROMPT SHIPMENTS LOW COST QUALITY PRODUCTS

CARLYLE RUBBER CO., INC.
103-107 Warren St., New York 7, N. Y. Digby9-3810

DEPENDABLE USED MACHINES

Special: Pioneer port. gravel plant; 9x36 crusher, pn. tires, Diesel power.

5x12 Mesabi screen
5x16 Telsmith screen
4x10 Telsmith screen
30'x200' conveyor
24'x80' conveyor
4x12 screen with spray bars
B-G No. 358 hopper car unloader
Symons vibrating bar grizzly
Eagle 22"x25' screw classifier
American 20HP car puller
3'x8' apron feeder
3½'x14' Oro feeder
26" reciprocating feeder
16x16 roll crusher
30" magnetic pulley

This equipment rebuilt in our modern plant by expert mechanics. Come see it!

10004 Southwest Highway **TRACTOR & EQUIPMENT CO.** **Oak Lawn, Ill.**

FOR SALE

Lorain Model 820 Shovel equipped with 2½ yard Dipper with Waukesha Diesel Engine. Also equipped with 85 foot crane boom and approximately $2500.00 parts. Machine is five years old but has not been used last three. Recently overhauled and not used since. Very attractive price F.O.B. Colorado.

ANDERSON EQUIPMENT CO. INC.
13th & Farnam **Omaha, Nebraska**
Phone Harney 2533

---

150 ton Flory 2 drum elec. **HOIST**
DRYERS: 4½x40, 5½x40, 6x60, 8-9x100, 8x125
One mile of 42" **CONVEYOR**, complete
23 ton MM Crush, Lorain MC414 Truck **CRANES**
CRUSHERS: 440, 1020, 1040, 1324, 1836, 2036, 2436, 2540, 4836, 4043, 4248, 8466 **JAW**, #19, 37½ Kennedy, 16", 18", 36" McCully, 8K & 9K Gates Traylor 2'4" and 4TZ GYR. 1616, 3018, 4022 **DBL ROLL**. 2' & 3' Telsmith Cone.
PLANTS: CRAAA, Pitmaster, Pioneer 305W, AW81 CatD8800, D13000, D17000, GMC 260HP **DIESELS**
MILLS: 6x22", 7x22", 8x30" Ball. 4x15 Rod. 5½x22 Tube. 3630, 3660 Hammer.
Apron **FEEDERS:** 42"x12, 42"x16, 48"x14. 3', 9' & 14' air **SEPARATORS**
WASHERS: Eagle 14"x14', 16"x12', 20"x18'
SHOVELS & DRAG: Bucyrus 10B, 38B. NW7, 25, 95. P&H1055, 855. Marion 111, 490, 7200. Lima 1201. Monighan 9W. General 420. Koehring 301
Repres: Bonded Scale & Machine Co.

MID-CONTINENT EQUIPMENT CO. INC.
8321 Gannon St. Louis 24, Mo. Wydown 1-2626

SPECIALS

1—New 6½'x150' kilns
1—#6 Williams Hammermill
1—28" Telsmith Intereone Crusher
1—10½" Clyde Dehydrator

KILNS

1—4½'x40' Kiln,
1—9'x150' Kiln,
1—10½'x100' Kiln,
1—10½'x250' Kiln,

DRYERS

1—4½' x 39', 9'x60'
1—7'x60'

CRUSHERS

1—36"x42", 24"x36", 18"x36"
12"x24" Jaw Crushers
2—42"x16" Allis-Chalmers Crushing Rolls
2—24"x14" Rogers Iron Works Crushing Rolls. Rebuilt
1—36"x16" rebuilt Sturtevant Rolls
1—24"x12" Farrell Bacon Crushing Rolls Rebuilt
1—No. 330 Allis-Chalmers Hydrocones
1—6", 10", 16" and 20" McCully Superior Gyratory Crushers
No. 3 up to 12 Gyratory Crushers

BALL, ROD & TUBE MILLS

6'x12', 5½'x10', 8'x6' Ball Mills
2—5'x16'; 1—5½'x10'; 1—4'x11' Rod Mills
2—5½'x20' and 5'x22', 6'x22' Tube Mills

MISCELLANEOUS

1—14' & 16' Air Separator
8'x10', rotary Filters

We Make New Dryers, Kilns, Dust Collectors

Have you any machinery that you want to sell?

W. P. HEINEKEN, INC.
50 Broad St. **New York 4, N. Y.**
Phone Whitehall 4-4236

FOR SALE OR RENT

1—Model F Wiley all-steel Stiffleg Derrick with 60' boom, 32' mast. Rated 30-ton @ 38' radius.
1—Model E Wiley Stiffleg Derrick with 60' boom, 30' mast. Rated 25-ton @ 38' radius.
1—5" suc., 3" dis. Ingersoll Rand two-stage electric Jetting Pump with 100 HP 220/440V-60C-3ph. motor. Capacities from 715 GPM at 169' head to 215 GPM at 584' head.
1—4" Jetting Pump direct connected to 100 HP Chrysler engine. Capacities from 600 GPM at 270' head to 100 GPM at 696' head.
2—6" suc. 4" dis. Gorman Rupp gasoline powered Jetting Pump. Capacities from 690 GPM at 58' head to 320 GPM at 430' head.
1—5" suc. Hale Fire Pump, gasoline-powered. Capacities 500 GPM at 150# pressure.

Write for New Stock List No. 459

EQUIPMENT CORPORATION OF AMERICA
CLIFTON HEIGHTS, PA. **Box 608P**
PITTSBURGH 30, PA. **Box 933P**
CHICAGO 4, ILL. **327-P S. La Salle St.**
NEW YORK 7, N. Y. **30P Church St.**

PRICED TO SELL

1—Page—1½ yd. Type RC Drag Bucket SN6-2670
1—Diamond Agg. Bin/w Jack Legs—21 c.y. SN-32143
1—Agg. Bin—28 c.y.
1—Johnson Agg. Bin w/Clam Gate—35 c.y.
1—Syntron Vibratory Feeder, Model F-22
1—Woods Auto-Vortex Bowl Sand Classifier—20' Dia.
1—Woods Sand Classifier—72" Dia.
1—Woods Sand Classifier—66" Dia.

Located at Riverdale, North Dakota
Offered Where Is—As Is—Subject to Prior Sale

GARRISON SPILLWAY CONSTRUCTORS
Riverdale, North Dakota
Phone: Riverdale 633

SHOVELS—DRAGLINES DRILLS CRANES—EUCLIDS

9-W Bucyrus Erie Drag, 165', 10 yd.
625 Page Diesel Drag, 150', 10 yd.
625 Page Diesel Drag, 160', 9 yd.
6160 Bucyrus Monighan Elec. Drag, 160' 8 yd.
621 Page Diesel Drag, 135', 5 yd.
621 Page Diesel Drag, 125', 7 yd.
7200 Marion Drag, 120', 7 yd.
200-W Bucyrus Monighan Drag, 140', 6 yd.
2400 Lima Drag, 120', 6 yd.
4500 Manitowoc Drag, 120', 5 yd.
620 Page Diesel Drag, 115', 6 yd.
120-B Bucyrus Erie Elec. Drag, 115', 5 yd.
111-M Marion Drag, 80', 5 yd.
1055 P&H Drag, 110', 4 yd.
1201 Lima Drag, 85', 3 yd.
3500 Manitowoc Drag, 80', 2½ yd.
1001 Lima Drag, 80', 2½ yd.
955 P&H Drag, 100', 2½ yd.
54-B Bucyrus Erie Drag, 85', 2½ yd.
80-D Northwest Drag, 65', 2½ yd.
170-B Bucyrus Erie Elec. 6½ yd. Shovel
1600 P&H Elec. 6 yd. Shovel
1500 P&H Elec. 5 yd. Shovel
120-B Bucyrus Erie Elec. 4½ yd. Shovel
111-M Marion 4 yd. Elec. Shovel
111-M Marion 4 yd. Diesel Shovel
1055 P&H 3½ yd. Shovel
1201 Lima 3½ yd. Standard Shovel
111-M Marion 3 yd. High Lift Shovel
1201 Lima 2½ yd. High Lift Shovel
3500 Manitowoc 3 yd. High Lift Shovel
80-D Northwest 2½ yd. Shovel
54-B Bucyrus Erie 2½ yd. Shovel
38-B Bucyrus Erie 1½ yd. Shovel
25 Northwest ¾ yd. Shovel
22-B Bucyrus Erie ¾ yd. Shovel
Unit 1020 ¾ yd. Shovel
802 Lima Cranes
600 Reich Heavy Truck Mounted Rotary Air Drills (Both Lever Arm and High Mast)
58-BH Joy Champion Rotary Air Drills
Also 42-T, 29-T and 27-T Well Drills

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l. Bank Bldg.
HAZLETON, PA.
GLadstone 5-3658

---

5 TUBE MILLS 7' x 24' & 5'6" x 22'
5 ALLIS CHALMERS & SMIDTH WITH SCREW FEEDERS.
6' x 15' COMBER MILL
ALLIS CHALMERS MILL WITH FEEDER.
6'6" x 14'6" ROD MILL
HEAVY DUTY, MANG. STEEL LINERS.
8' x 10' DRUM FILTER
ECMICO CONTINUOUS TYPE.
R. C. STANHOPE, INC.
60 East 42nd St. New York 17, N. Y.

FOR SALE

Two Model 27 T Bucyrus-Erie Blast Hole Drills, Crawler mounted, Chain and Sprocket Drive, Equipped with Tele-Telescopic Derrick and Built-In Tool Wrenches. Powered by International Gasoline Motors, Water Cooled, 4 Cylinders with Twin Disc Clutch. With the following accessory equipment for 6⅝" Drilling: Combination and Regular Drill Stems, Wire Rope Sockets, Drill Bits and Fishing Tools.
One Spare Jack Shaft completely installed. Will fit either unit.
One #8 Bucyrus-Erie Bit Dresser—Complete without motor.
One Coke Furnace—With Champion Electric Blower.

All items are located at:

W. E. GRAHAM & SONS QUARRY
P.O. Box #4207 N. Sta. Winston Salem, N.C.

TANKS FOR SALE

2 8500 Gal. ¼ in. steel
5 10000 Gal. ⅞ in. W. P. 200 lbs.
1 13000 Gal. 5/16 in. steel
1 45000 Gal. 5/16 in. steel
1 74000 Gal. 5/16 in. steel

Above tanks ideal for bulk storage or hot-mix plant

JONES OIL COMPANY
Box 182 Coshocton, Ohio
Phone 2113W Day or Nite
Ask for R. R. Jones

NEW—RAILS—RELAYING
Track Accessories
All prices cheerfully quoted.
M. K. FRANK
480 Lexington Avenue - New York City
Park Bldg., Fifth Avenue - Pittsburgh, Penna.
105 Lake Street, Reno, Nevada

FOR SALE

CLASSIFIER Dorr 26' bowl with rakes.

ELEVATOR Centrifugal discharge 40' centers 10 x 6 buckets, 13 x 42 casing.

CRUSHER Rotary Fine Crusher suitable for crushing to ¼".

G. & W. H. Corson, Inc.,
Plymouth Meeting, Pa.

KILNS—COOLERS—DRYERS
705-20 Link-Belt Roto Louvre, SS.
502-16 Link-Belt Roto Louvre.
6'x60' Rotary Dryer.
5'x10 Hearth Furnace.
5'x20'x¼" welded.

PULVERIZERS—MILLS—CRUSHERS
8"x15" Pacific Jaw Crusher.
18"x18" Jeffrey 1-roll spiked.
14"x16" B.& S. 2-roll spiked.
Raymond #1 Pulverizer.
4' Standard Symons.
6'6"x21' Schmidt Tube Mill.
8'x36" Hardinge Conical Mill.
20"x12" Jeffrey Hammer Style A, NEW.
15"x8" Jeffrey Hammer Style B, NEW.

BUCKET ELEVATORS
58' c/c 14x8 buckets, steel case.
52' c/c 5x5 buckets, complete.
32' c/c 6x4 buckets on 7" belt.
26' c/c 8x6 buckets, steel case.

SCREENS
Rotex #21, 40"x84".
Robinson Gyro Sifter 28A.
Tyler 5x12, 8x10, Wet Type.
Universal Roads 18" Cent. Separator.

MISCELLANEOUS
628 CFM I.R. Compressor 14x13 100 HP.
150 HP Union W. T. Boilers.
47' Screw Conveyor, 12" 2 HP motor.
12" Merrick Weightometers.

SEND US YOUR INQUIRIES

HEAT & POWER CO., INC.
60 East 42nd St., New York 17, N.Y.
Murray Hill 7-5280
(Machinery & Equipment Merchants)

600' COMPRESSORS FOR SALE

6 LeRoi, Year old, International Harvester Diesel Engines, Skid mounted.
2 Ingersoll-Rand Rotary, late issue, on 4 pneumatic tires.
Immediate delivery from New York. Will arrange inspection if interested.

Phone J. J. McGovern or F. G. Helthaler

MAHONEY-CLARKE, INC.
217 PEARL ST. NEW YORK, N. Y.
WHitehall 3-0760

ROTARY DRILLING BITS

FOR ALL SIZES & TYPES OF FORMATIONS

One of the most complete Rotary Bit repair shops in the East.
It is our specialty to cut your drilling cost per foot.

For further information, please call or write:

TEXAS-EASTERN BIT COMPANY
P. O. Box 48 Uniontown, Pa.
Phone Geneva 7-4826

DIESEL POWER PLANT FOR SALE BY OWNER

GENERATOR
1000 K W, 1250 KVA, .80 PF, 2300 Volt, 3 phase, 60 cycle, 720 RPM, General Electric, Serial 5640882.

DIESEL ENGINE
General Motors, Cleveland Diesel Engine, 16 cyl, Model 278A, rated 1440 HP at 720 RPM, Serial 9855.

ACCESSORY EQUIPMENT
Generator control panel, lube and fresh water coolers, filters, air intake silencer, carbon dioxide engine killing unit, pryometer board, engine control board, day tanks, heat exchangers, alarm system, compressors, air storage tank, centrifuge, exhaust silencer, 32 x 48 Butler steel building housing unit.

TRANSFORMERS
4—333KVA 2400—240/480 volts, General Electric.
Located at Greene, No. Dak. on trackage offered where is and as is, subject to prior sale.

J. L. SHIELY COMPANY
1101 N. Snelling Ave. St. Paul 13, Minn.
Midway 6-8601

9—SACO Speed Reducers, 4 to 60 H.P.
11—Parallel Shaft Reducers, 25 - 150 H.P.
Vertical Reducers, 3 to 25 H.P.
Gearmotors, ½ H.P. to 20 H.P.
2—Pennsylvania Hammermills, SXT-14, each with 450 H.P. GE Motors.
Pioneer 15x36 Jaw, Bronze Bearing.
Cedar Rapids Jaw Crusher 15" x 36".
Dodge Lever Type Jaw Crusher 9" x 15".
Climax Jaw Crusher 10" x 20". New Jaws.
Champion Jaw Crusher 12" x 26".
Acme Crusher 12" x 22". New Jaws.
Acme Jaw Crusher 14" x 26".
Acme Jaw Crusher 10" x 18".
5—5' and 6' Pebble Mills.
S-A Hammermill, Knittel Type.
Wright 8 Ton Chain Hoist.
Niagara 18" x 72" S.D. Screen.
Gayco 8' Separator.
4—Easton Dump Cars 24" ga. 1½ yd.
15 Ton Stiffleg Derrick, 110' Boom.
42" x 12' Air Tank, ½" shell.
2—6" Enclosed Bucket Elevators.
1—8" Enclosed Bucket Elevator.
Apron Feeder 18" x 5½ ft.
10" and 12" Gravity Roller Conveyor.
6" to 16" Screw Conveyor & Parts.
Misc. Size Large Conveyor Pulleys.
8 x 14 D.C. Magnetic Pulley.
30 x 19 D.C. Magnetic Pulley.
24 x 26 Permanent Magnetic Pulley.
50—48" Trough Idlers, antifriction.
75—42" Trough Idlers, antifriction.
69—36" Trough Idlers, 5 roll type.
18" and 24" New Idlers.
351 ft. New 42" belt.

G. A. UNVERZAGT & SONS INC.
136 Coit St. Irvington, N. J.

FOR SALE
One Joy 500 cfm. compressor 1950 mounted on 4 wheels with two bar worked only 1 yr. F.o.b. N. J. $5500.00. Will operate for any inspection.

J. PAUL MECHLER
489 Scotland Road So. Orange, N. J.
South Orange 3-2991

FOR SALE
EUCLID REAR DUMP TRUCKS

Bucyrus-Erie Draglines, 2½ yd. to 8 yd.
Bucyrus-Erie Shovels, ¾ yd. to 8 yd.
Northwest Draglines, ¾ yd. to 2½ yd.
Northwest Shovels, ¾ yd. to 2½ yd.
Manitowoc Draglines, 2½ yd. to 5 yd.
Manitowoc Shovels, 2½ yd. to 5 yd.
Marion Shovels & Drags, 4 yd. to 9 yd.
Lima Shovels & Drags, 1½ yd. to 6 yd.
Osgood Shovels & Drags, 1½ yd. to 2½ yd.
Caterpillar Graders & Dozers.
Hi-Lift Shovels.
P&H Truck Mtd. Crane & Hoe, ⅜ yd.
2400 Lima Shovel front attachment.
4500 Manitowoc Shovel front attachment.
6" and 9" Drills. Diesel and Electric

other equipment available not listed above.

WILLIAM LUBRECHT, III
Construction Equipment

311 W. Diamond Ave. - Hazleton, Pa.
Phone: Gladstone 5-4041 or 5-8388

MOTORS AND GENERATORS
All sizes, new and rebuilt. Starters, accessories, pulleys and repair parts. Gear motors, Falk Shaft mounted Speed Reducers, couplings and V-belt drives.

EXPERT REPAIR SERVICE

NUSSBAUM ELECTRIC CO.
220 E. Douglas Avenue Fort Wayne, Ind.

Equipment Located in All Parts of The Country

Crushers: jaw, cone, gyratory, roll, hammermill—Rod, ball & tube mills—Screening, washing & crushing plants—Screw, rake & bowl classifiers—Compressors—Conveyors—Blast hole drills—Dump cars—Engines—Feeders—Generators—Hoists—Kilns & dryers—Locomotives—Motors—Pumps—Pipe—Screens—Shovels & draglines—Trucks—Transformers—Weightometers. 3' & 4' Symons. 30" Sup. McCully gyratory. 3042 Pioneer primary. Pennsylvania SXC 1358 & SXC 100 hammermills. 12' x 17' Bradford breaker. 3030 New Holland impactor. 42" conveyor. 1300 cfm PRE-2 compressor. Ingersoll Rand QM-2 Quarrymaster drill. 4-tube modern valve packing machine. LOCOMOTIVES: 125 ton diesel-electric—8 ton 36" ga. trolley—20 ton diesel std. ga.—CARS: 8 ton Granby type tram 36" ga.—71 cu. ft. 24" ga. gable bottom tram. HOISTS: Sgi. drum A-C 800 hp, 1000 fpm. skip 9000#, ore 17920#, rope 3460#—Sgi. drum Sullivan 400 hp, 16,135# pull, 600 fpm.—Dbl. drum 10,000# pull at 500 fpm.

STANLEY B. TROYER EQUIPMENT CO.
Box 97 Crosby, Minnesota Phone 500

38' x 48" Wide Belt Conveyor—Good
42" Wide Belt Conveyor—Like New
8" Morris Slurry Pump—Ball Brg.
9x34' Howe Platform Truck Scale
L-41 Lorain Heavy-duty Dragline
150 KVA, 220 V. Diesel Electric Set
20 Ton all steel stiffleg Derrick

H. & P., 6719 Etzel, St. Louis 14, Mo.

FOR SALE OR RENT

45 ton General Electric Diesel Elec. Loco.
25 ton Ohio Diesel Loco. Crane 1947.
Christian 2D Hoist & Swinger, 138 HP Buda Diesel Engine. 15,000 # SLP.
2 100 HP Lucey Portable Horiz. Fire-Box Boilers. 200 lbs. Oil Fired. ASME.
25 ton American Steel Guy Derrick.
30 ton Steel Stiffleg Derrick 125' bm.
1½ yd. Northwest No. 6 Diesel Crane 1948.
1½ yd. Bucyrus-Erie 38-B Diesel Crane 1948.
5 yd. Manitowoc 4500 Shovel-Dragline.

Mississippi Valley Equipment Co.
513 Locust St. St. Louis 1, Mo.

RELAYING RAIL
Track Accessories
All Sizes

LEFTON INDUSTRIAL CORP.
General Office: 212 Victor Street
St. Louis 4, Missouri

FOR SALE

4—5½' x 22' ball mills with Trunnion discharge complete with liners and motors.

3—8' x 9' x 100' Kilns, ¾" plate, rivited complete with motors and drives.

1—42" x 48" Jaw Crusher with motors.

CHARLES V. FISH CO. INC.
530 Hamilton St. Allentown, Pa.
Phone: HEmlock 5-4701

MOTORS · GENERATORS
TRANSFORMERS
NEW · REBUILT
WORLD'S LARGEST INVENTORY
ELECTRIC EQUIPMENT CO.

EQUIPMENT LOCATED
GA. - N.Y. - CALIF. - OHIO - TEXAS - ILL.

GRINDING MILLS

BALL MILLS—3'x4', 4'x8', 5'x6', 5'x8', 5'x10', 6'x5', 6'x7', 6'x8', 6'x10', 9'6"x11'.
HARDINGE MILLS—4'6"x16", 6'x14", 6'x22", 6'x36", 7'x22", 8'x36", 8'x48", 10'x48".
ROD MILLS—12"x24" LAB., 3'x10', 4'x8', 4'x9', 4'x14', 5'x8', 5'x10', 5'x14', 6'6"x14'6" & 8'6"x12'.
TUBE MILLS—5'x14', 5'x22', 5'6"x22', 6'6"x21'.

HAMMERMILLS

JEFFREY—36"x42", 42"x36", 42"x48", 42"x24".
PENNSYLVANIA—2-SXR-100 TPH-THOR SXT 13-48"x54".
UNIVERSAL—No. 4, 36"x26", 3240 IMPACTOR.
CEDAR RAPIDS—3033.
WILLIAMS—GA-60-44x60 FEED OPENING.

APRON FEEDERS

54"x10'3"—54"x16'—3'x12'.

FILTERS—SEPARATORS—CLASSIFIERS

OLIVER DRUM—8x10', 12'14', 14'x18', 11'6"x18'.
DORR RAKE CLASSIFIERS—5'x25', 8'x38', 12'x31', 14'x30'.
DORR BOWL RAKE—3'x24'x12', 5'x30'x28', 16'x 24'x28'.
WOODS SAND CLASSIFIER—72", 96".
CONVEYCO SAND CLASSIFIER—4'x10'.
17 THICKENERS—100', 80', 36', 24', 16' & 12'.
20"x15 EAGLE SINGLE SCREW COARSE MATERIAL WASHER.

ROTARY DRYERS & KILNS

DRYERS—40"x21', 4'x20', 6'x40', 6'x80', 8'x125'.
KILNS—6'x28', 6'x7'x80', 7'x110', 9'x140', 10'x 105'.

JAW CRUSHERS

BLAKE TYPE—46"x84", 36"x48", 30"36", 24"x 36", 18"x36", 16"x22".
SINGLE SHAFT—25"x40", 20"x36", 18"x36", 10" x24".
CAM & ROLLER—24"x40", 14"x26", 11"x26", 10"x20", 6"x20".

GYRATORY FINE REDUCTION CRUSHERS

SYMONS—3', 4', 5½'.
KENNEDY—198, 258, 378.
SUP. McC.—6", 10", 18" A-C 322B.

GYRATORY PRIMARY CRUSHERS

6", 10", 14", 16", 20" & 36" SUP. McC.—Gates AL. CHAL. 3, 4, 5, 6, 7½, 8, 9 12K.

CONVEYORS

30" x 140' 30" x 100' & 30" x 200'.

STEEL DERRICKS

UTILITY: 8 TON 85 FT. BOOM, 25 TON 60 FT. BOOM, 15 TON 100 FT. BOOM, 20 TON 115 FT. BOOM, 50 TON 100 FT. BOOM.
STIFF LEG: 5 TON 70 FT. BOOM, 15 TON, 100 FT. BOOM, 25 TON 100 FT. BOOM, 75 TON 135 FT. BOOM. 1—5 TON 100 FT. BOOM.

ASPHALT & OIL TANKS

15—8,000, 10,000 & 20,000 GAL. CAP. WITH COILS. 6—10,000 GAL. R.R. CAR TANKS.

RAILWAY CARS

177—DUMP STD. GA.—20, 16, 12, 6 & 4 YD.
36—FLATS—10 TON, 40 TON, 50 TON CAP.
44—TANK CARS—8,000 & 10,000 GAL. CAP.
75—V Dump Cars, 1½ & 3 Yd.

R. R. CAR DUMPER

150 TON CAP. STD. GA. CAR DUMPER.

AIR COMPRESSORS—ELECTRIC

198, 420 & 676 WORTHINGTON BELTED.
1302 CFM & 1574 CFM INGER. RAND PRE-2.
1170 CFM GARDNER DENVER HAE1084-2300 V.
1575 & 2200 CFM—OCB—CHGO, PNEU. ELEC.
3078, 3864 & 5440 CFM Inger. Rand.

DIESEL LOCOMOTIVES

1—25 TON, 1—80 TON GEN. ELECTRIC
2—25 TON PORTER, 1—45 TON WHITCOMB

R. C. STANHOPE, INC.
60 E. 42nd St. New York 17, N.Y.

FOR SALE

Cedar Rapids 2236 Jaw Crusher, by-pass grizzly, 3 x 12 feeder, 75 HP electric motor and V-belt drives —exceptionally good condition
$11,000

Cedar Rapids 18 x 36 factory rebuilt Jaw Crusher with 3x12 feeder.
$10,000

WILSON MACHINERY & SUPPLY CO.
561 W. 4th St. Lexington, Ky.

CONCRETE EQUIPMENT ALSO GRADING EQUIPMENT

1—Koehring 34E Dual Drum Paver, Serial No. 21621. $11,000.00
3—Cement Bins connected together, total capacity 1373 bbls., Blaw-Knox Service bin and two Johnson silos w/ bucket conveyor, screw conveyors, truck dump hopper and air compressor. 10,000.00
1—Cleveland Subgrader, pull type multiple blade, and scarifier, S/N 54x68, like new. 2,000.00
1—Lot 1900 ft. Heltzel Road Forms, 9" high, 8" base with locks and pins, in excellent condition, per lin. ft. 1.50
2—Dewalt Radial Saws, ea. 400.00
3—Master Vibrators, electric, ea. 200.00
1—Hydra Hammer, 4 pneumatic tires, Wisconsin engine, S/N 625 4,500.00

GRADING & OTHER EQUIPMENT

1—Buffalo Springfield Roller, 10 Ton, S/N 18680, w/Waukesha gas engine, a good roller.
1—5 - 8 Ton Buffalo Springfield Roller, S/N 21936.
1—Parts Trailer with bins installed.
4—Cat DW10 Tractors and Model 10 Caterpillar Scrapers.
2—D8 Cat Tractors, with Angle Blades.
1—D8 Cat Tractor with push plate and Double Drum Power Unit.
1—D7 Cat Tractor with push plates and Double Drum Power Unit.
1—D4 Cat Tractor with Straight Dozer.
1—Model HO20 Allis Chalmers Tractor and Garwood Angle Blade.
3—Scrapers, Garwood 25 cu. yd.
1—Air Compressor, Gardner Denver, 210 ft.
1—Air Compressor, Worthington, 105 ft.
1—LeTourneau Ripper, heavy duty, 3 tooth.

Contact us for Prices on Any Not Priced. All this equipment in Good Condition and Ready to Do a Job. All of this equipment is subject to prior sale.

HART & HART
P. O. Box 52 - Phone 165 or 145K12
Clay City, Indiana

8' x 125' VULCAN ¾" SHELL RIV. ROTARY KILN

DARIEN CORP.
60 E. 42ND ST. N. Y. 17, N. Y.

GRAVEL WASHERS

Two EAGLE COURSE MATERIAL SCREW WASHERS, 24" x 15', with shale removers, 15 HP 220/440 volt motor, all necessary check and gate valves, piping, etc., single deck 3' x 6' screen with spray bars and 3 HP motor. Each complete washer with screen is mounted on a single axle trailer with two new 9.00 x 20 tires. Starters for the motors are included. Will sell either or both units complete or less trailer and single screen. These washers have been used but very little and are in excellent condition. Located in our Des Moines yard.

GIBBS-COOK EQUIPMENT COMPANY
1314 Walnut St. Des Moines, Iowa
Phone — CHerry 3-1176

A. C. Gates 6 K

Gyratory Re-Crusher in A-1 Working Condition for sale at Bargain Price of $3500.00. F. O. B. Cars, Crossville, Tennessee.

Call Owner —
Southern States Lime Corp.
Crossville, Tenn., Phone 440
or:

OSBORNE EQUIPMENT CO.
Market at Front St. Knoxville 1, Tenn.
Phone: 5-1177

FOR SALE

20—BARCO Model H-6 Gasoline Dr. Paving Breakers, 100-lb., 1⅛"x16" chuck. New.
8—Highway Trailer Co. Type PE Earth Diggers, Gasoline Dr. Briggs & Stratten Model 23B Gas Engine with H-T Co. Right Angle Drive. With Flex. Shafts, Augers, etc. For truck mounting. Excellent condition.

CONSTRUCTION & POWER MACHINERY, INC.
270 23rd St. Brooklyn 15, N. Y.
South 8-4900

The Broadcast Section of Pit and Quarry is the Best Advertising Medium for your Idle Machinery and Equipment

CEDAR RAPIDS 2-Unit Portable Crushing & Screening Plant, w/18 x 24 r.b. Jaw crusher, feeder, underconveyor, Cat. diesel, mounted tandem pneumatic tires. Secondary portable w/16 x 24 r.b. Double Roll, 3 x 8 2-deck vibr. screen, power, wheel return, conveyors, mounted tandem pneumatics. Good. $15,000. New York.
ROGERS 25 x 40 r.b. Jaw Portable Primary w/apron feeder, underconveyor, mounted factory tandem pneumatics. Excellent. $18,750.
EAGLE 20 x 36 r.b. Jaw Portable Primary w/apron feeder, underconveyor, diesel power, on factory tandem rubber. Good. $13,500.
CEDAR RAPIDS Portable Crushing & Screening Plant w/20 x 36 r.b. Jaw, apron feeder, 30 x 20 hammermill, 3 x 12 2-deck vibr. screen, diesel & gas power, conveyors, mounted tandem rubber. Closed circuit. Capacity about 100-125 tph of 1¼" minus. $17,500.
WISCONSIN FDRY. Portable Gravel Plant w/10 x 36 r.b. Jaw, 30 x 18 rolls, 4 x 12 2-deck screen, diesel power, two delivery conveyors, etc. mounted tandem rubber. Al. $12,500.
LIPPMANN Portable Plant w/18 x 30 r.b. Jaw, apron feeder, 30 x 18 rolls, 3 x 8 2-deck screen, rotovator, mounted tandems. $17,500.
DIAMOND Portable Gravel Plant w/10 x 24 r.b. Jaw, 24 x 18 rolls, 3 x 10 2-deck screen, Cat. diesel, tandem rubber. $13,500.
GRUENDLER 24 x 36 r.b. Jaw Crusher w/10' apron feeder & Hopper. Good. $7750.
GRUENDLER 3XB hammermill w/rock grates, good. $750 Yard.
JAEGER 210 cfm Portable Compressor w/Cat. D4600 diesel on rubber. Al. $2500 Rental Purchase.
GARDNER DENVER 500 cfm Portable Compressor w/Cat. D13000 diesel on rubber. Overhauled. $4250 Rental Purchase.
INSLEY WB Shovel, 1 cy. diesel, new 1953, like new. $18,750.

WENZEL MACHINERY RENTAL & SALES CO.
565 S. 10th Kansas City, Kans.
Mayfair 1-1710

FOR SALE OR RENT—EASY TERMS
Rebuilt — A I Condition
48B Bucyrus Erie Shovel 2 cy Diesel
Northwest Model 6 Shovel, 1½ c.y.
Caterpillar D8 Bulldozer

WILLIAMS CONSTRUCTION COMPANY
Box 145 Balto. 20, Md. Murdock 6-6900

FOR SALE

1 - Used 34E Dual Drum Foote Paver, Serial #46D581, with GMC Diesel Engine.
1 - Used 604 Lima 1½ yd. Shovel, Serial #4560, with Cummins Diesel Engine.
1 - Used Model 16BV Euclid Loader, Ser. #135, with Cummins Diesel Engine, 15' Conveyor Extension, with pneumatic tired Dolly.

CONLEY-LOTT-NICHOLS MACHINERY CO.
1311 South Ervay - RI-6404
DALLAS, TEXAS

FOR SALE or RENT

1—Full Revolving Electric Gantry Crane, 440-60-3.
1—Full Revolving Steam Gantry Crane, 40 tons capacity.
1—Full Revolving Steam Crane, 60 tons capacity, for barge or gantry mounting.
1—955-A P&H Diesel Crane, with Fairlead, only 400 hrs.
2—250' Car Floats or Barges.
1—Steel Stiff Leg Derrick, 25 tons capacity, 80' boom. Complete with electric hoist.
4—100 ton — 5-sheave Derrick or Crane Blocks with Shackle, and with Cheek Weighs, reasonable.
4—50 ton — 4-sheave Blocks and Shackle, with or without weights.
2—Steel Barges 210' x 55' x 10'.
20—Pontoon Float Bridges 5' x 5' x 7'.
4—5½ yd. Rex Truck Mixers on 10 wheel Macks.
1—#1 Vulcan Pile Hammer.
1—#5-S McKiernan-Terry Single Acting Pile Hammer.
2—25 ton P. & H. Truck Cranes

WILLIAM P. SWIFT
P. O. Box 174, Springfield, Pennsylvania
Swarthmore 6-8999

KILNS—DRYERS—COOLERS

1—9′ x 45′, ¾″ shell.
4—7′ x 110′, 9/16″ shell.
1—7′6″ x 7′ x 125′ ½″ shell.
2—6′ x 74′, ⅜″ shell.
2—7′5″ x 20′, 5′2″ x 20′ Link Belt Roto-Louvre.
1—6′ x 40′, ⅜″ shell.
1—6′ x 60′, 5/16″ shell.
1—4′6″ x 50′, ⅜″ shell.

CRUSHERS—PULVERIZERS—MILLS

2—Allis Chalmers 10″ Superior McCully.
1—Allis Chalmers K-9 Gates Gyratory.
10—Jaw Crushers 5″ x 6″ to 42″ x 48″.
2—Pennsylvania #SXR-100, 100 TPH.
6—Hardinge 4½″ x 16″, 6′ x 22″, 7′ x 36″ 8′ x 36″ and 8′ x 48″.
3—Patterson 6′ x 8′ Ball Mills.
1—Raymond #53 Imp Mill.
1—Dixie #3620 non-clog Hammermill.
5—NEW Jeffrey Hammermills 20″ x 12″, 8″ x 15″.

SCREENS—SEPARATORS

2—Tyler Hummer Screens 3′ x 5′, 4′ x 5′ Single and Double Deck.
1—Link Belt 3′ x 8′ double deck Screen.
5—Rotex 40″ x 84″, 40″ x 120″.
1—Air Separator 4′.

MISCELLANEOUS

2—Chicago 14″ x 7″ Compressors, 434 afm.
2—Oliver Rotary Dewaterers 8′ x 4′.
12—Bucket Elevators 20′ to 75′ centers.
250 ft. Link Belt 12″ Troughing Conveyor.
1—10,500 gpm Centrifugal Pump 135′ head.

Partial List
Your Inquiries Solicited

BRILL Equipment Company
2401 Third Ave. New York 41, N. Y.
or
4101 San Jacinto St. Houston 4, Texas

CRUSHER

UNIVERSAL two-stage semi-portable, 20″ x 36″ Jaw Crusher, 30″ x 18″ Roll Crusher, complete with screen, conveyors, etc. New Condition.

PRIESTER MACHINERY COMPANY, INC.
249 S. THIRD ST. MEMPHIS, TENN.
Phone JAckson 5-6885

FOR SALE

PUMPS

1—Ingersoll-Rand 300 GPM, 300′ head, Type 3CVH, 15 HP—3600 RPM, 220/440V 60/3

2—Ingersoll-Rand 900 GPM, 30′ head—no lift, Type 5RVL, 7½ HP—1200 RPM, 220/440V 60/3

2—Blackmer Reciprocating 50 GPM, 25# per sq. in., Size IN5INV, Serial Nos. 291837-8, 2 HP—1750 RPM, 220/440V 60/3, Class 1 Group D Service

1—Ingersoll-Rand Model 10ALV 4210 GPM, 275′ head, Size 10 x 12, 1775 RPM. Can fit with 400 HP 1800 RPM synchronous or induction motor to customer specifications.

MOTORS

6—400 HP 1800 RPM Synch. 2300 V, 60/3, West. and G.E. with controls

6—500 HP 1800 RPM Synch. 2300 V, 60/3, West. and G.E. with controls

Wire, write or phone Lima 2-4710.
Items listed subject to prior sale.

THE LIMA ARMATURE WORKS, INC.
143 East Pearl St. Lima, Ohio
"Over 30 Years Continuous Service to Industry"

FOR SALE

7—Ingersoll-Rand Wagon Mounted Air Drills, 1948 & '52, model GM 15, with 6DU Utility Hoists and ID 505 Drills or Busters. 80 W 2 Haiss Pathdigging Bucket Loader on good rubber, reconditioned. $3500.00
12 yd. Penn Rock Body with Dual Hoists, mounting, pump, complete, excellent cond. $1,000.00
Foote Speed Reducer; Ratio 20 to 1, 98.6 H.P.
100 HP Allis-Ch. Ind. Motor 495 RPM, 2200 v. with equipment, Excellent cond. $800.00
6 yd. Bucyrus Erie 120 B Rock Dipper complete.
5R D6 Cat Dozer with LeT cable front, 2325 hrs. Just completely reassembled. $3500.00
3—Link Belt Motorized Speed Reducers, Ratio 708 to 1, output speed 24.7 RPM Shaft 4⅜″ dia.; 15 HP West'g 440 v. built in motors.
3—Whitcomb Trolley type Elec. Loco.; 36″ ga.; 8 ton, 250 volts DC.
2—New Lorain Crawler Sprockets 7815 C.
125 H.P. Pacific Steel Boiler, New 1952, used 3 winters, 15# steam, 30# water, with Iron Fireman Stoker. Excellent cond.

McCARTNEY MACHINERY COMPANY
Box 3105 Youngstown 12, Ohio

FOR SALE

1—electric Rail Car Puller
4—Eagle fine material washers, new—20″x18′
1—2x6 single deck Vibrating Screen
1—Model 7 Northwest Dragline
1—Euclid Model No. 1Z Bottom Dump
1—30 K.W. Diesel Generator Sets 220-440 Volt 3 phase

COOGAN GRAVEL COMPANY
903 Jefferson Bldg. Peoria, Ill.
Phone 3-9553

FOR SALE BY OWNER

2 Hammermills—24″ x 24″, Eagle Crusher Co.
2 Locomotives—8 and 12 ton, 36″ gauge Plymouth, Gasoline
12 Cars—2 yard capacity, 36″ gauge; Atlas Car and Manufacturing Company
1 Screen—3′ x 8′ single deck, W. S. Tyler dewatering
6 Pumps—3″ Bingham Pump Company—Service liquid flotation feed 35′ head, 475 G.P.M.
10 Pumps—4″ Bingham Pump Company—Service liquid flotation feed 55′ head, 290 G.P.M.
6 Flotation Cells—Morse-Wolning type. Size 42″ x 42″ x 48″
For further information contact J. H. Clements.

BASIC, INCORPORATED
Maple Grove, Ohio
Post Office, Fostoria, Ohio

POWER UNIT FOR SALE

Murphy Diesel Model 21 Power Unit, complete - like new - Priced attractively.

Hunter Tractor & Machy. Co.
327 South 16th St. - Milwaukee 3, Wis.

FOR SALE

ALLIS-CHALMERS MODEL HD-15GC Front End Loader, S/N 3765 with torque converter; New March 1955. 3 Cu. Yd. Standard Bucket. Also has Rock Fork (3 cu. yd.) 20″ semi-grouser shoes; H. D. Truck Wheels; Hour Meter; Counter Weight; Tractomotive Accumulator for reducing the shock when loading and unloading. Located at Sioux Falls, S. Dak. Priced right.

SIOUX ROAD INC.
SIOUX FALLS RAPID CITY
Phone 4-4587 Fillmore 2-4102
SOUTH DAKOTA

QUARRY EQUIPMENT

Cedarapids 1036-2416 Junior Tandem on rubber. Rebuilt.
Cedarapids 4036 hammermill port. secondary.
Cedarapids single pass plant with 1024 jaw on rubber.
Cedarapids 42″ x 10′ apron feeder. Rebuilt.
Williams 20″ x 30″ NF pulverizer.
McLanahan 12″ x 30′ Log Washer with V-Belt drive.
New 12″ x 35′ inclined open belt type elevator.
27½ ton single compartment 8′ x 12′ bin.
60-ton, 2-comp. 8′ x 18′ storage bin w/clam gates.
100-ton, 2 comp. 13′ x 23′ bins.
Special bins to your specifications.
Conveyors—18″ - 24″ - 30″ - 36″. Also belting.
18″ dia. x 20″ face magnetic pulley.

SHOVELS AND CRANES

Lorain 820 2-yard diesel shovel-crane-drag. Reconditioned.
Marion 33M ¾-yard combination shovel-clam-hoe, G. M. diesel.
P and H 255A ¾-yard diesel shovel, International diesel.
Lorain TL-20 4 x 4 self-propelled crane. Excellent.
Lorain Byers 83 diesel powered hoe.
Lorain Byers 83 diesel crane-clam.
Lima 84 Paymaster ¾-yard diesel shovel. Good condition.
Lorain TL-20 6 x 4 Moto-Crane.
Lorain 40A ¾-yard clam-crane, Waukesha gas engine.
Insley K-12 ½-yard crawler clam-crane.
Link-Belt LS-50 ⅜-yard shovel.
Buckeye 70 crawler clam, gas power.

TRACTORS, TRUCKS, SCRAPERS, ETC.

1—Euclid 18-yard Twin Engine Scrapers. Very good condition.
1—Euclid S-12 12-yard scraper. New condition.
6—Euclid 18-yard bottom dumps, Buda Diesel.
2—Euclid Tractors with 3200 gallon water tank, Semi-trailer.
2—Euclid Model 3BV Loaders.
3—Caterpillar DW-10 Scrapers. Recond.
2—Caterpillar DW-15 Scrapers. Excellent.
1—Woolridge 15-18 yard, Model TCR Scrapers. Rebuilt.
1—Allis-Chalmers HD19 with Carco Blade. Excellent condition.
1—Allis-Chalmers HD10 with Baker Bulldozer Blade.
1—International TD18 with Bucyrus Erie Bulldozer Blade. Excellent condition.
1—International TD9 with front shovel attachment.
1—Caterpillar D-8. Fair condition.
1—International TD24A with Bucyrus-Erie angledozer. Fair condition.
2—LeTourneau "D" scrapers. Excellent.

DIESEL POWER UNITS

Caterpillar D7700, 68 H.P. @ 1000 RPM. Rebuilt.
Caterpillar D13000 6-cyl. diesel engine. Twin Disc clutch, extended shaft, outboard bearing. 145 H.P. @ 1000 RPM. Rebuilt.

AIR COMPRESSORS

600 cu. ft. Gardner-Denver diesel. Part. new.
500 cu. ft. Ingersoll-Rand, Waukesha diesel. Reconditioned.
500 cu. ft. Gardner-Denver diesel. Rebuilt.
365 cu. ft. Gardner-Denver diesel. Excellent.
315 cu. ft. Gardner-Denver diesel. Practically new.

ASPHALT PLANT

Barber-Greene Model 848 with drier, graduation unit, etc.

L. B. SMITH, INC.
CAMP HILL, PA.
Phone Harrisburg REgent 7-3431

LOCOMOTIVES FOR SALE

Plymouth Model DLC, Gas. Oper., 10-Ton, Std. Gauge, #3817 with Climax Model TU Gas. Engine.
Plymouth Model KC-45 "Flexomotive" Diesel Oper., 45-Ton, Std. Gauge, #3990, with Cooper Bessemer 300 H.P. Dsl. Engine.

CONSTRUCTION & POWER MACHINERY, INC.
270 23rd St. South 8-4900 Brooklyn 15, N. Y.

Index to Advertisers

A

A A Wire Products Co. 250
Ajax Flexible Coupling Co., Inc. 214
*Allis-Chalmers Mfg. Co. 13, 90-91, 198
*Allis-Chalmers Mfg. Co.
Construction Machinery Division 217
American Brake Shoe Co. 221
American Chain & Cable Co., Inc. 49, 148
American Clay Machinery
Div. of Huber-Warco Co. 277
American Hoist & Derrick Co. 158, 211
*American Manganese Steel Div.
American Brake Shoe Co. 52-53, 209, 314
*American Pulverizer Co. 240
American Road Builders' Assn. 187
*American Steel & Wire Div.
U. S. Steel Corp. 33-34-35-36, 54-55
Anaconda Wire & Cable Co.
Sub. of Anaconda Copper Mining Co. 213
Andrews Machine Co. 249
Armstrong-Bray Co. 212
Automotive & Aircraft Division,
American Chain & Cable Co., Inc. 148
Available Carrier Mfg. Co. 92

B

*Babcock & Wilcox Co. 222
*Bailey Meter Co. 299
Baldwin-Lima-Hamilton Corp.
Construction Equipment Div. 193
*Barber-Greene Co. 65
Bay City Shovels 309
*Bemis Bro. Bag Co. 212
*Besser Co. 232, 241, 263, 289, 294
*Bethlehem Steel Co. 313
*Bin-Dicator Co. 272
Bonded Scale & Machine Co. 301
Bradley Pulverizer Co. 165
Brill Equipment Co. 307
Broadcast Section 300-307
Bucyrus-Erie Company 141
*Buell Engineering Co., Inc. 161
*Butler Bin Co. 295

C

Calumet Division 138
Cape Ann Anchor & Forge Co. 46
Carlyle Rubber Co., Inc. 303
Carpenter Manufacturing Co. 286
Caterpillar Tractor Co. 16-17
Chase Bag Co. 168
Chase Foundry & Mfg. Co. 282
Chevrolet Motor Division,
General Motors Corp. 147
Chicago Pneumatic Tool Co. 22
Cinder Shippers 286
Cities Service Oil Co. 57
Cleaver-Brooks Co. 229
Cleveland Vibrator Co. 69
Cleveland Worm & Gear Co. ..... Inside Back Cover
Coates Steel Products Co. 176
*Colorado Fuel & Iron Corp. 45, 186
Columbia Machine Works 255
*Combustion Engineering, Inc.
Raymond Division 224
Commercial Shearing & Stamping Co. 173
Concrete Manufacturer Classified Section 290-291
*Construction Machinery Co. 293
*Continental Gin Co. 311
Cook Bros. Equipment Co. 262
*Cross Engineering Co. 204
Cullman Wheel Co. 162

D

Darden Industries, Inc., Roy 281
Davey Compressor Co. 166
*Deister Concentrator Co. 50
*Deister Machine Co. 9
Des Moines Glove & Mfg. Co. 284
*Diamond Iron Works, Inc. 63
Dow Chemical Co. 275
Drott Mfg. Corp. 171
Du Pont de Nemours & Co., E. I. 167
Dur-O-wal 282
Dustex Corporation 165

E

*Eagle Crusher Co. 59
*Eagle Iron Works 25
Easton Car & Construction Co. 3
Eaton Mfg. Co. 71
Edick Laboratories 286
Eighmy Equipment Co. 303
Eimco Corporation 149
Elastizell Corp. of America 236
Ensign-Bickford Co. 103
Equipment Corp. of America 303
Erickson Power Lift Trucks, Inc. 286
*Erie Strayer Co. 267
Euclid Division, General Motors Corp. 41

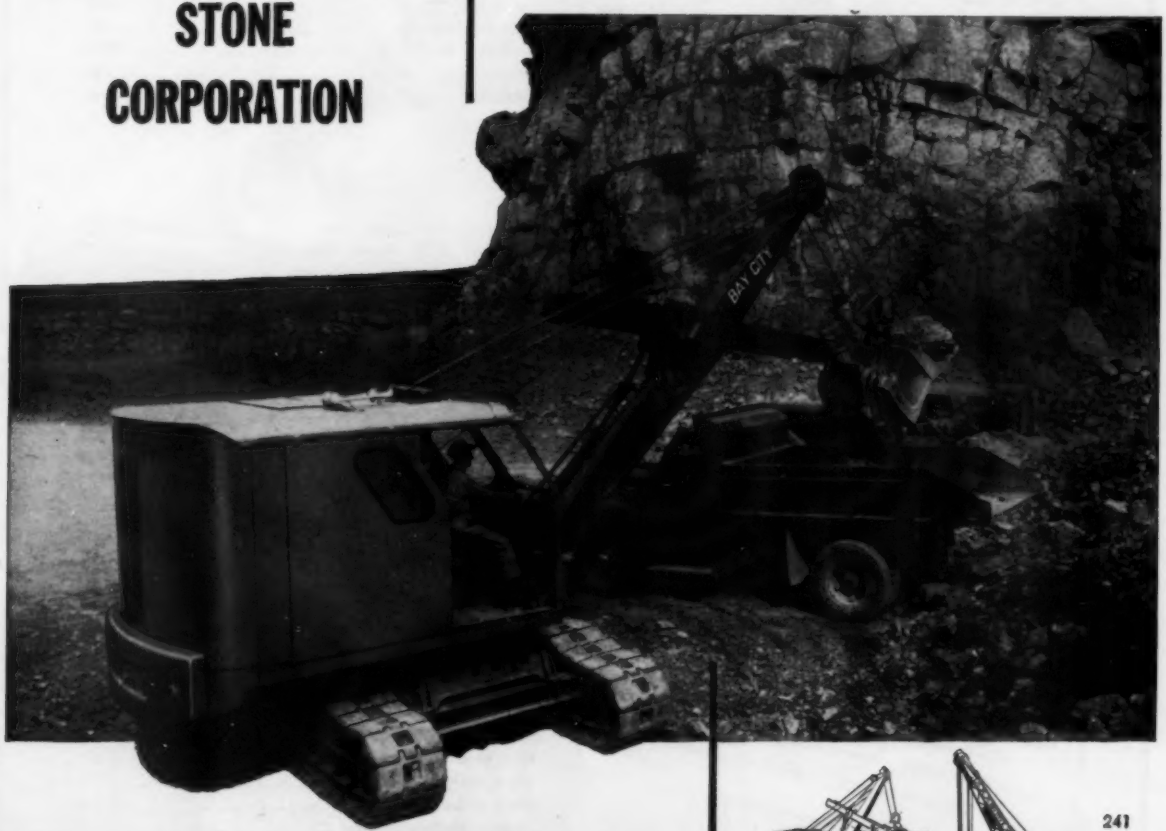
*See also Detailed Information in 1956 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK.

BAY CITY

¾-YARD SHOVEL handling 800-1000 tons blasted rock per day for the CATSKILL MOUNTAIN STONE CORPORATION

"Our BAY CITY Model 45 shovel with ¾-yard rock type dipper not only averages 800 to 1000 tons of blasted rock per 10-hour day in feeding the crusher, but it also sorts out stones weighing up to 6 tons for secondary blasting," says Mr. W. H. Peckham, President of Catskill Mountain Stone Corporation. BAY CITY doubled the daily production over a former light duty ¾-yard shovel, proving once again that for heavy duty work there's nothing like the tough, powerful BAY CITY. It has double dipper sticks, 3-part line, a 6-foot rotating path, helical cut gears, separate shafts and bearings for each hoist drum, and it is powered by a big 517 cubic inch Waukesha engine. These specifications compare favorably with many 1-yard shovels. Get complete information on the BAY CITY 45 from your BAY CITY dealer.

Write for these catalogs describing BAY CITY *Crawlers of ½ yards and up,* BAY CITY *CraneMobiles and CraneWagons in capacities to 25 tons.*



241

BAY CITY

BAY CITY SHOVELS, INC. • BAY CITY, MICHIGAN

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

F

Fairbanks, Morse & Co. 207
*Falk Corporation 151
Farrell-Cheek Steel Co. 70
Fate-Root-Heath Co. 188
Firestone Tire & Rubber Co. 192
Fiske Bros. Refining Co., Lubriplate Division 44
Fleming Mfg. Co. 237
Flexible Steel Lacing Co. 50
*Food Machinery & Chemical Corp. 273
Ford Motor Co. 20-21
Forney's Inc. 244
Forrer's Division, Spray-O-Bond Co. 288
Four Wheel Drive Auto Co. 245
Frank, M. K. 304
*Frederick Iron & Steel, Inc. 206
Frog, Switch & Mfg. Co. 146
*Fuller Co. 191

G

*General Electric Co., Communication Equipment 259
General Engines Co., Inc. 291
General Motors Corp. 41, 147
General Tire & Rubber Co. 175
Giffels & Vallet, Inc. 159
GO Corp. 297
Goodyear Tire & Rubber Co. 1
Griffin Corp., Larry 279
Gulf Oil Corp. 43
Gwynne, Inc., J. H. 279

H

H & L Tooth Company 210
Hannon & Sons, F. R. 30
*Harbison-Walker Refractories Co. 105
*Hardinge Company, Inc. 51
Hart & Hart 306
Hazard Wire Rope Division, American Chain & Cable Co., Inc. 49
Heat & Power Co. 304
Heidenreich, E. Lee, Jr. 300
Heineken, Inc., W. P. 204, 303
*Hendrick Mfg. Co. 212
Hendrix Mfg. Co. 203
*Hercules Motors Corp. 140
Hetherington & Berner, Inc. 206
*Hewitt-Robins, Inc. 114-115
Hough Co., Frank G. 201
Hubert-Warco Co., American Clay Machinery Division 277
Hydrotile Machinery Co. 242
*Hyster Co. 243

I

Industrial Brownhoist Corp. 68
International Alloy Tool Steel Co. 42
International Harvester Co., Construction Equipment Div. 74-75, 171, 189
International Nickel Co. 199
International Paper Co. Bagpak Division ....Inside Front Cover
*Iowa Manufacturing Co. 73
Irvington Form & Tank Corp. 287

J

Jaeger Machine Co. 246-247
Jeffrey Mfg. Co. 8
*Johns-Manville Corp. 172
*Johnson-March Corp. 170
*Joy Manufacturing Co. 208

K

Kaiser Aluminum & Chemical Corp. 121
Kansas City Hay Press Co. 204
*Kennametal, Inc. 40
*Kennedy-Van Saun Mfg. & Engrg. Corp. 18-19
Kent Machine Co. 285
Koehring Co. 38-39
Koppers Co., Inc. 223
*Kraft Bag Corp. ....Back Cover

L

Laclede-Christy Company, Div. of H. K. Porter Company, Inc. 157
LeTourneau-Westinghouse Co. 136-137, 197, 296
Lima Armature Works, Inc. 307
Lincoln Electric Co. 32
*Link-Belt Company 95, 225
*Link-Belt Speeder Corp. 61
*Lippmann Engineering Works, Inc. 84-85
Lone Star Cement Corp. 228
Lubrecht III, William 305
Lubriplate Division, Fiske Bros. Refining Co. 44

M

Mack Trucks, Inc. 215
Manheim Mfg. & Belting Co. 200
Manitowoc Engineering Co. 196
Marion Power Shovel Co. 185
McDermott Bros. Co. 208
*McLanahan & Stone Corp. 150
McNally Pittsburgh Mfg. Corp. 135
McNamar Boiler & Tank Co. 261
Memphis Equipment Co. 280
Mine & Smelter Supply Co. 152
Moline Malleable Iron Co. 216
*Morris Machine Works 164
Motorola Communications & Electronics, Inc. 235
Murphy Diesel Co. 202

*See also Detailed Information in 1956 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK.

Continental IDLERS

for Every Type of Operation

AVAILABLE from STOCK

Continental conveyors are cutting costs, conserving time in hundreds of the nation's leading coal and ore mines, quarries, steam power plants, cement mills, paper industries, grain mills—in fact in almost every type of industry where fast, smooth handling of bulk materials is needed. Write and let us know your requirements.

CG-5607

Other Continental Products

Belt, Screw and Apron Conveyors
Bucket Elevators — Plate or Apron Feeders
Power Transmission Equipment
Trippers — Belt Brushes — Pulleys
Sprockets and Chain — Pillow Blocks
Belting — Speed Reducers — Fabricated Steel
Meehanite Castings — Special Machine Work

INDUSTRIAL DIVISION
CONTINENTAL GIN COMPANY
BIRMINGHAM, ALABAMA

ENGINEERS — ATLANTA • CLEVELAND • DALLAS • KNOXVILLE — MANUFACTURERS
MEMPHIS • NEW YORK 17, NEW YORK

N

National Wire Cloth Co. 286
*Naylor Pipe Co. 178
Neff & Fry Co. 146
New York Engineering Co. 48
Noble Company 238-239
*Nordberg Manufacturing Co. 28-29
Norfolk & Western Railway 14-15
*Northern Blower Company 156

O

Olsen Corp., Gene 297
O'Neill, A. J. 302
Oswalt Engineering Service Corp. 282
Owen Bucket Co. 180

P

*Page Engineering Co. 5
Patterson Foundry & Machine Co. 66
Peabody Engineering Corp. 27
*Pennsylvania Crusher Div.,
Bath Iron Works Corp. 100
Pennsylvania Drilling Co. 300
*Pettibone Mulliken Corp. 47
Pfarrer-Schmidt Engineering Co., Inc. 162
Philadelphia Gear Works, Inc. 42
Porter Company, Inc., H. K. 79, 157
Portland Cement Assn. 264
Praschak Machine Co. 283
PreCaster, Inc. 234
Precision Machine Works 276
Preco, Inc. 26
Presto Brick Machine Corp. 230
Productive Equipment Corp. 64

Q

*Quaker Pioneer Rubber Mills
Quaker Rubber Corp.
Divs. of H. K. Porter Company, Inc. 79
Quinn Wire & Iron Works 280

R

Radio Corporation of America 251
*Raymond Bag Co. 119
*Raymond Division,
Combustion Engineering, Inc. 224
Reichard-Coulston, Inc. 264
*Research-Cottrell, Inc. 126-127
Roebling's Sons Corp., J. A. 205
*Rogers Iron Works Co. 177

S

Sarasota Engineering Co., Inc. 244
Sauerman Brothers, Inc. 174
Schaffer Poidometer Co. 44
*Screen Equipment Co. 179
Sheffield Steel Corp. 226
Shell Oil Co. 6-7
Shiely Co., J. L. 304
Side-O-Matic Unloader Corp. 289
*Simplicity Engineering Co. 144-145
Sinclair Refining Co. 169
SKF Industries, Inc. 195
Sly Mfg. Co., W. W. 142
*Smidth & Co., F. L. 181
Smith Engineering Works 31
Smith, Inc., L. B. 307
Southern Tire Co. 208
Spang & Company 132
Spillman Co., R. L. 291
Sprague & Henwood, Inc. 160
Spray Products Corp. 208
Standard Dry Kiln Co. 284
Standard Metal Mfg. Co. 210
Stanhope, Inc., R. C. 305
*Stearns Manufacturing Co., Inc. 298
Stoody Co. 155
Straub Mfg. Co. 139
*Sturtevant Mill Co. 219
Surety Rubber Co. 279
Swabb Equipment Co., Inc., Frank 304
*Syntron Co. 154

T

Taylor-Wharton Iron & Steel Co. 184
Texas Company 11
Texas-Eastern Bit Co. 304
*Thomas Foundries, Inc. 153
Timken-Detroit Axle Div. 182-183
Torrington Company 218
*Traylor Engrg. & Mfg. Co. 163, 194
Trinity Div., General Portland Cement Co. 284
Truck-Man Division, Knickerbocker Co. 292
*Twin City Iron & Wire Co. 288
Twin Disc Clutch Co. 143
*Tyler Co., W. S. 56

U

Unit Step Form Co. 272
United States Rubber Co. 67
*United States Steel Co. 33-34-35-36, 54-55, 108-109
*Universal Engineering Corp. 47
Universal Road Machinery Co. 212
*Universal Vibrating Screen Co. 162
Unversagt & Sons, G. A. 305

V

Victor Equipment Co. 190
Virginia Gear & Machine Corp. 42

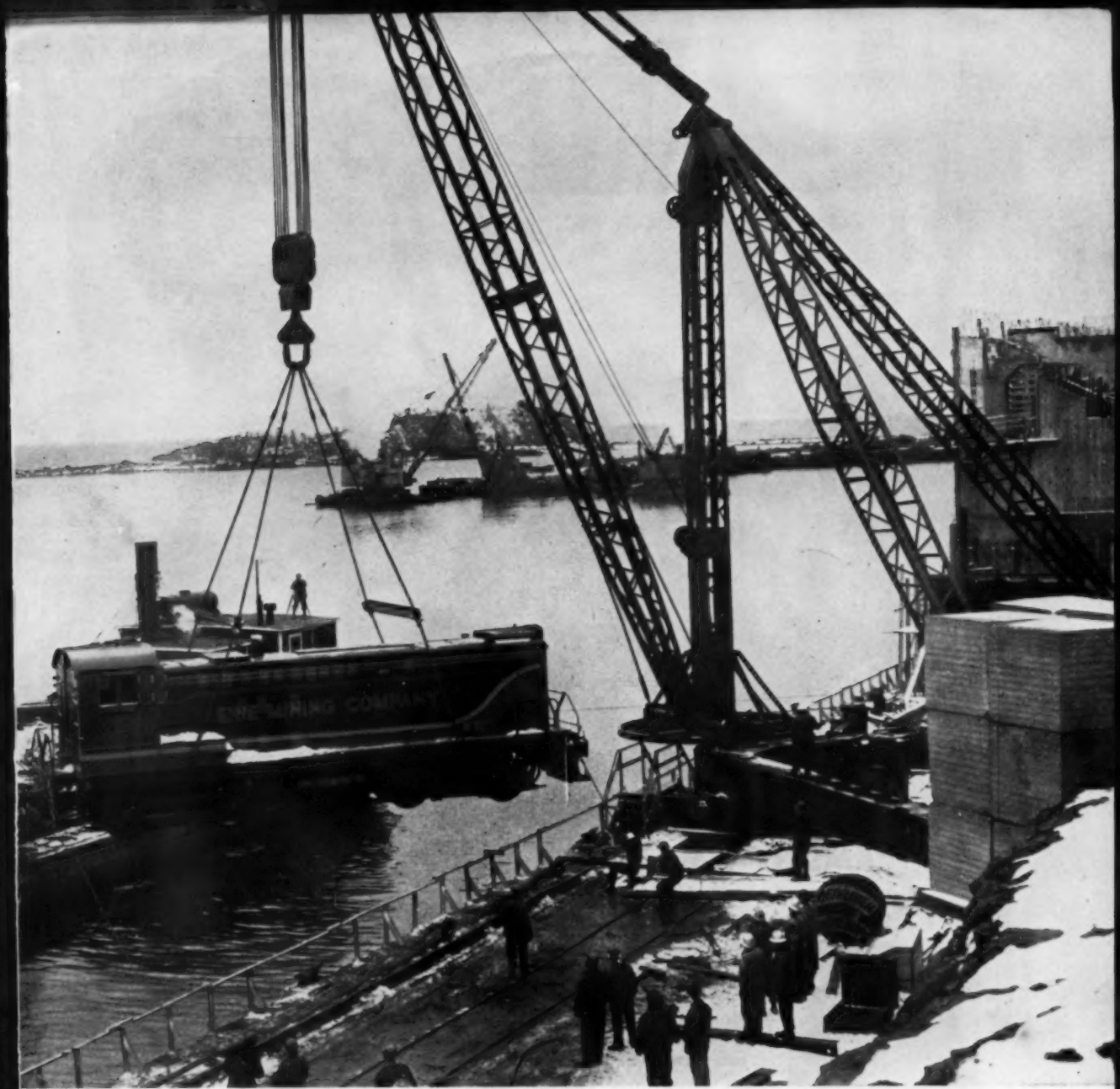
W

Wall Colmonoy Corp. 206
Wenzel Machinery Co. 306
Western Machinery Co. 4
*Western Precipitation Corp. 220
Westinghouse Transit Mixer Division,
LeTourneau-Westinghouse Co. 296
Williams, Roger F. 288
Wire Rope Corp. of America 46
*Wood Co., Chas. E. 214

Y

*Yuba Manufacturing Co. 62

*See also Detailed Information in 1956 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK.



Wire Rope at Work—For a locomotive, this is a rather unusual experience—a quick trip by air from barge to dock, over gray, chill waters. The unit pictured is one of a trio shipped from Duluth to Taconite Harbor, Minnesota, for use at Erie Mining Company's vast taconite project. In handling the load, that big, powerful derrick hoisted the locomotive as easily and gently as if it were a toy.

The derrick, a stiffleg, has a capacity of 183 tons at a 40-ft radius. For the load shown here, the rigging was 21 parts to the boom line, 18 parts to the hoist line. Bethlehem Purple Strand was used throughout—a grade of wire rope so strong and tough that it's always a logical choice for jobs like this.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

MINING • QUARRYING • CONSTRUCTION • EXCAVATING • PETROLEUM • LOGGING • MANUFACTURING

"AMSCO® is the only pump we can use in our speeded-up production system"

To increase production at least 50% by jet-induced suction, equipment is stepped up from a normal 505 rpm to 720 rpm at Holloway Gravel Co., Inc. According to J. M. Hallman, superintendent at this company, "The Amsco is the only pump we can use under this speeded-up system and the only one that we would ever try to use. It is a very, very rugged pump . . . it has to be for our work."

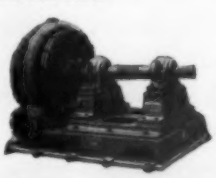
Holloway has loaded up to 15 cars—10 cars of gravel and 5 of sand—each hour for an eight-hour period using this stepped-up production method.

Holloway uses four 10" Amsco Counter-Flow pumps. Deposit averages 40% sand, 30% gravel, balance overburden. Total lift is 60 to 65 feet—pipelines up to 1500 feet in length have been used.

According to Mr. Hallman, "In our opinion, the Amsco gives maximum performance. Considering the extreme use we make of it, it exceeds expectations in the matter of maintenance and down time due to repair."

QUICK FACTS ABOUT AMSCO PUMPS

Whether your dredging operation is large or small, you can get an Amsco Dredge Pump to handle the job. Standard sizes range from 6" to 20" discharge openings. Larger sizes are also available. An Amsco Pump Engineer will be glad to discuss your requirements, or write for Bulletin 1052P, giving full information and specifications on the Amsco line.



AMERICAN Brake Shoe COMPANY

AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

OTHER PLANTS IN: DENVER, LOS ANGELES, NEW CASTLE, DEL., OAKLAND, CAL., ST. LOUIS, JOLIETTE, QUEBEC

Compact Cleveland Speedaire on winch which hoists equipment. Photos courtesy of Ellicott Machine Corporation, Baltimore, Md.

All over the world, SPEEDAIRE drives winches on Ellicott dredges

USED for harbor improvement, land reclamation, sand and gravel production and other dredging jobs, Ellicott dredges are known throughout the world. Their reputation is one of quality. This starts with the component parts of Ellicott dredges and dredging machinery, an important one being the Cleveland Speedaire Drive. Used to operate the hauling and hoisting equipment, the Speedaire transmits power smoothly and without interruption. It takes little space and weighs much less than a conventional drive. It continues its economical operation year after year. In fact, Cleveland case-hardened steel worms and nickel-bronze gears actually improve with use—will be even more efficient many years from now.

Investigate what Speedaire and other type Clevelands can do for your operations. Catalog 400 gives the complete story. Write for your free copy today. The Cleveland Worm & Gear Co., 3280 E. 80th St., Cleveland 4, Ohio.

Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers Limited.

Are you good at figures?
EXAMPLE 1
Valve Bags for Granular or Pulverized Materials
If you increased filling production from 12 per minute to 15 or more per minute — without paying a penny more for sleeve or special insert bags... what would be the percentage of increase — and dollar savings to you — per ton — per hour?
EXAMPLE 2
Open Mouth Bags for Free Flowing Materials
If you increased filling production from 15 per minute to 20 or more per minute — without paying a penny more for your open mouth multiwall bags... what would be the percentage of increase — and dollar savings to you — per ton — per hour?

KRAFT BAG CORPORATION

Gilman Paper Company Subsidiary

630 Fifth Avenue, New York 20, N. Y.
Daily News Bldg., Chicago 6, Ill.

check and mail today ——————

- ☐ We are interested in Example 1.
- ☐ We are interested in Example 2.
- ☐ We are interested in both examples.

NAME OF COMPANY_____

ADDRESS_____

CITY_____ ZONE____ STATE_____ PRINCIPAL_____

PRODUCT MFD._____

We have the bags and the packer to effect such savings — *or more!*

Give us the time to give you the facts!

Dependable as a service for 3 generations. Exclusive Sales Agents for the Kraftpacker Automatic Filling Machine and one of the largest integrated producers of multiwall bags with plants in St. Marys, Georgia and Gilman, Vermont, manufacturing every type of multiwall bag in use today!